



**U.S. Army Research Institute
for the Behavioral and Social Sciences**

Research Report 1772

**Assessing and Managing User-Produced
Training Support Packages**

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**U.S. Army Research Institute
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14. ABSTRACT (Maximum 200 words): This report describes the conduct and results of a project to examine assessment and management of user-produced training support packages (TSPs) for collective training exercises in live, virtual, constructive, and combined training environments for combat arms organizations at brigade and below at present and for the next five years. "User-produced" refers to TSPs that are developed by unit commanders and other unit trainers as well as institutional trainers who will be directly involved with executing the exercises they produce. The major research activities consisted of: data collection, data analysis, and development of products to fulfill the project objectives. A major focus of data collection was coordinating with the ongoing development of the Army Training Information Architecture which will establish a framework within which the products of the current project will fit. The project produced the following: a process for identifying core set exercises for combat arms units; the list of components and elements of a TSP for collective training exercises identified to a level sufficient to develop database specifications for them; recommendations for TSP assessment, approval, and distribution; and an identification of six types of users of TSPs along with their roles in exercise execution.					
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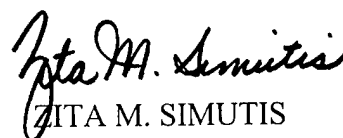
FOREWORD

While unit commanders and other unit trainers have always played a significant role in training, they are likely to become increasingly involved in the development of that training as resources are reallocated across the Army. This is particularly true in the area of collective training exercise development. To facilitate development activities, tools are being developed that lead unit trainers to develop structured training exercises and the associated training support packages (TSPs). The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has been a leader in the development of such tools through work accomplished in the Armored Forces Research Unit at Fort Knox, Kentucky. For the past several years, the Commanders' Integrated Training Tool (CITT) for the Close Combat Tactical Trainer (CCTT) has been undergoing development and refinement to provide commanders with a tool to tailor structured training in the CCTT to maximize its benefit in their unit training strategy. While these efforts have been largely successful, it remains to be seen how well they will work for other training environments and types of exercises.

This report describes a project to examine management and assessment of user-produced TSPs that will provide the basis for the possible expansion of CITT-like tools to other collective training environments. It provides a list of TSP components around which exercise development tools would be developed. It specifies a methodology for identifying exercises that would comprise a core set that would serve as exemplars and which users could modify to serve their specific needs. It examines TSP assessment and distribution issues as well as maintenance requirements. It also examines how the process of user-produced TSP development, assessment, and management fits within the Army Training Information Architecture.

The work described in this report was completed under ARI Work Package 205, "Assessment of Force XXI Training Tools and Techniques." It builds upon ARI's development of the CITT software application as well as a previous study of distributed training development. Relevant requirements documents include: (1) a Memorandum for Record (MFR) between the Chief, ARI Armored Forces Research Unit (AFRU) and the Project Manager for the Combined Arms Tactical Trainer entitled "Structured Training for the Close Combat Tactical Trainer," 25 July 1997; and (2) a MFR between the Chief AFRU and the Director of Training Development and Analysis in the U.S. Army Training and Doctrine Command's Office of the Deputy Chief of Staff for Training (TRADOC ODCST) entitled "Integration of Training Development Among Schools and Distributed Training Environments," 30 November 1998.

This report will be of interest to designers and managers of current and future Army training. A final briefing (in the form of a compact disk) of the findings and recommendations was provided to senior TRADOC ODCST personnel in April 2001. Personnel in the Army Training Support Center are using portions of the report to specify future TSP elements.


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The authors wish to acknowledge the contributions and assistance of a number of individuals and organizations without whom the project could not have been accomplished. Dr. Bill Burnside, contracting officer's representative (COR) and Dr. Dave Bessemer, assistant COR, from the Armored Forces Research Unit, U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), were active contributors to the project providing assistance and counsel throughout. Ms. Charlotte Campbell, Program Manager of the Human Resources Research Organization (HumRRO) Advanced Distributed Training Program was program manager for the project and provided valuable input and assistance. Mr. Mike Flynn of Litton PRC and Mr. Don Forrest of HumRRO made many valuable contributions, especially to the training support package (TSP) component and element identification process with unflagging participation and attention during many long and tiring meetings. Dr. Kathy Quinkert, Chief of the ARI Scientific Coordination Office at U.S. Army Training and Doctrine Command (TRADOC) Headquarters, provided support for the review of the TSP components and elements as well as the core set identification process.

Additionally, we had support and guidance from the following organizations:

- TRADOC Deputy Chief of Staff for Training
- Directorate of Training and Doctrine Development, Fort Knox
- The Force XXI Systems Engineering and Technical Assistance team, Fort Knox
- The Commanders' Integrated Training Tool team, Fort Knox
- The Non-commissioned Officer (NCO) Academy, Fort Knox
- The Close Combat Tactical Trainer Site, Fort Knox
- Virtual Training Program Observer/Controller Team, 16th Cavalry Regiment, 1 Brigade, Fort Knox
- 4 Brigade, 85 Division (Training Support Brigade), Fort Knox
- 1 Brigade, 4 Infantry Division, Fort Hood
- 1st Battalion, 66 Armor, Fort Hood
- U.S. Army National Training Center

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ASSESSING AND MANAGING USER-PRODUCED TRAINING SUPPORT PACKAGES

EXECUTIVE SUMMARY

Research Requirement:

Army training development resources are becoming increasingly limited and constrained, a situation which is likely to continue. Additionally, current Army Deputy Chief of Staff for Personnel (DCSPER) planning calls for more resources to be allocated to table of organization and equipment (TOE) units and away from other organizations, making it unlikely that centralized agencies (e.g., U.S. Army Training and Doctrine Command proponent schools) can anticipate or produce all the training needed for any contingency. This will certainly place more of the burden of developing and modifying training on the users themselves, particularly development of collective training exercises. At the same time, however, the complexity of training has increased as a result of technological changes including much more sophisticated training aids, devices, simulators, and simulations (TADSS); the need to prepare for varying contingencies involving a wider variety of missions; and the possibility of conducting larger-scale training exercises combining live, virtual, and constructive training environments. Thus, while more collective training will be developed by units, they will need better and more sophisticated tools and methods to do so.

Central to the concept that users will develop collective training exercises is the need for determining requirements for training support packages (TSPs) to support those exercises. What are the components of the TSPs? Will the same set of components serve exercises for live, virtual, constructive, or combined training environments? What exercises would comprise a core set of TSPs for a given unit type? How will TSPs be assessed and managed? What tools will be needed to support user development of TSPs? How will user development of collective exercises and associated TSPs fit into the Army Training Information Architecture (ATIA) as it is currently being developed?

Procedure:

Answering these questions involved querying numerous sources from within the Army training community. Data were collected by interviewing various stakeholders and reviewing existing documentation. Based on the data collected, the project team developed products, processes, and recommendations to address the following project tasks:

- Determine a process that specifies requirements for a core set of TSPs in various training environments for various types of missions and exercises. This task focuses on training for combat operations for combat arms organizations at brigade and below at present and for the next five years.
- Identify the components of TSPs required for collective training exercises in live, virtual, constructive, and combined training environments.
- Design methods for assessing and managing user-produced TSPs over the next five years.

- Identify prototype tools for assessing and managing user-produced TSPs.

Findings:

The project developed a process for identifying core set exercises. This process involves identifying the unit for which the core set is being specified; determining viable training methods, in terms of exercise types and training environments, for the unit; specifying the content of the core set in terms of the collective tasks upon which it focuses; and identifying the specific exercises that comprise the core set.

The components and elements of a TSP for collective training exercises were identified to a level sufficient to develop database specifications for them, although we did not develop such specifications. As part of this activity, the project team also came to the conclusion that the same TSP components and elements can serve all collective training exercises for live, virtual, and constructive environments.

A process for assessing user-produced TSPs was identified involving five levels of assessment that may be used depending upon how the TSP is distributed. Management issues including how users will access TSPs, how TSPs might be distributed, and the approval and maintenance processes for distributed TSPs were considered and recommendations regarding them were provided. Finally, six types of users for TSPs were identified including developers, exercise support personnel, observer/controllers, site personnel, unit administrative support personnel, and the unit itself. Requirements that each of these user types will have for the information contained in the TSP are discussed along with the type of user tool or application that would serve each user's needs.

Utilization of Findings:

This project has examined issues related to user-produced TSPs in depth. Its results can benefit units who are developing their own collective training exercises, as well as proponents who develop and maintain core set exercises. In addition, future efforts to develop the ATIA and corresponding training information systems can build upon the work completed here to make full use of the unit-based training resources that exist throughout the Army.

ASSESSING AND MANAGING USER-PRODUCED TRAINING SUPPORT PACKAGES

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ASSESSING AND MANAGING USER-PRODUCED TRAINING SUPPORT PACKAGES

Introduction

Army training development resources are becoming increasingly limited and constrained, a situation which is likely to continue into the near future. As the Deputy Chief of Staff for Personnel (DCSPER)¹ Lieutenant General Maude (2000) recently wrote:

The Army Chief of Staff has tasked the DCSPER to staff the Army fully by 2003, with the requirement to staff the 10 divisions and two armored cavalry regiments fully by the end of fiscal year 2000. This is a significant challenge and will result in the short-term understaffing of table of distribution and allowances (TDA) units until the force structure has been realigned to reflect inventory realities. (p. 145)

This is further reinforced by the Army Training XXI Campaign Plan (U.S. Army Training and Doctrine Command [TRADOC], 1997) which states: "The foreseeable future will remain an era of constrained resources. The effect of resource constraints will be felt in the availability of dollars, training force structure, and training time."

Since current Army DCSPER planning calls for more resources to be allocated to table of organization and equipment (TOE) units and away from other organizations, it is unlikely that centralized agencies (e.g., TRADOC proponent schools) can anticipate or produce all the training needed for any contingency. This will certainly place more of the burden of developing training on the users themselves, particularly development of collective training exercises. At the same time, however, the complexity of training has increased as a result of technological changes including much more sophisticated training aids, devices, simulators, and simulations (TADSS), the need to prepare for varying contingencies involving a wider variety of missions, and the possibility of conducting larger-scale training exercises combining live, virtual, and constructive training environments. Thus, while more training will be developed by units, they will need better and more sophisticated tools and methods to do so.

Two U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) long-term initiatives directly address these issues in the collective training arena: structured training and user-produced training. At the same time, a TRADOC initiative, development of the Army Training Information Architecture (ATIA), is determining the overall environment in which user-produced training will be developed and implemented for the foreseeable future. Implementation of findings from the ARI initiatives must address and be compatible with training systems that will be developed within the context of the ATIA.

¹ All acronyms used in this report are included in Appendix A.

Structured Training

Structured training fully supports the Army's training doctrine as stated in Field Manual (FM) 25-100 (Department of the Army [DA], 1988) and is consistent with the Army's Systems Approach to Training (SAT) process as explicated in TRADOC Regulation (TR) 350-70 (DA, 1999). Building on early work in structured training completed by Brown (1991) in conjunction with training of the Reserve Component, ARI has been a leader in developing structured training principles and methodology. Campbell, Quinkert, and Burnside (2000) provide a comprehensive review of work conducted in structured training over the last decade. In this report, they describe structured training programs or exercises as having "five characteristics: an explicit task focus, a realistic scenario, focused task performance feedback, a training support package (TSP) to assist preparation and ensure standardization, and a linkage to a larger training strategy or family of programs" (p. 4). These characteristics have evolved and been refined through the course of a number of projects involving the development of live, virtual, constructive, and combined collective training exercises.

To facilitate the application of structured training, ARI produced a procedural model for its development as shown in Figure 1 (Campbell et al., 2000). This model is based on the SAT process specifically adapted to structured collective training exercises. In Phase 1, initial decisions are made regarding assumptions, constraints, and training expectations, and the training audience and type of simulation are specified. Phases 2 and 3 occur in parallel and involve specifying the objectives of the training and the design of the tactical scenario for the exercise. Phase 4 involves the preparation of the materials required to support the exercise – the TSP. Throughout all activities, there is an ongoing process of formative evaluation, the purpose of which is to monitor and improve the structured training products.

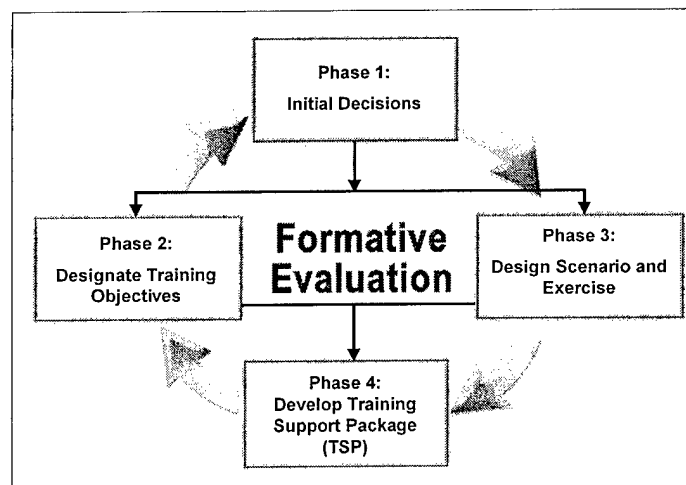


Figure 1. U.S. Army Research Institute for the Behavioral and Social Sciences structured training development process.

While all activities in the process are important, the TSP is key to making the structured training process work and, for collective training, is defined in TR 350-70 as: "A complete, stand-alone, exportable training package integrating training products and materials needed to

train one or more collective tasks and supporting critical individual tasks (including leader and battle staff). It is a task-based information package that provides a structured situational training scenario for live, virtual, or constructive unit or institutional training” (DA, 1999, p. V-7-4). The specific components of a collective TSP (referred to as a Warfighter TSP in TR 350-70) have continued to evolve, and it remains questionable whether a single set of TSP components will work for all collective training exercises, or different TSPs will be required depending on the exercise supported (Shlechter & Finley, 2000).

The efficient use of training resources in any single or combined environment requires that training be structured to meet specific objectives or needs. One way that this has been done, primarily for virtual and constructive environments, has been to design training deliberately to include events or cues that prompt the performance of particular tasks or portions of tasks. It is in implementing this degree of structure in training exercises that the use of TSPs assumes particular importance. It is also this degree of structure that allows and supports the possibility that users can themselves develop training exercises along with the TSP materials necessary to support them, which, in turn, requires that any tools or applications developed to assist the user be based upon and thoroughly grounded in structured training methodology.

User-Produced Training

The second initiative that impacts the anticipated shortage of proponent-produced training exercises is the move to user-produced TSPs, where users are defined as unit commanders and other unit trainers as well as institutional trainers who will be directly involved with executing the exercises they produce. An ARI-sponsored series of projects conducted over the past three years has demonstrated the feasibility of user-produced collective exercises, at least for training in a virtual environment (Gossman et al., 1999; Gossman et al., 2000). These projects have been based on the concept that, to some extent, users of training in any environment will increasingly need to develop their own TSPs, or at least modify a core set of TSPs.² The major product of these ARI projects is the Commanders’ Integrated Training Tool (CITT) for the Close Combat Tactical Trainer (CCTT). The CCTT is a virtual training system that supports the training of collective tasks and supporting individual and leader tasks for armored and mechanized infantry units, including combat support and combat service support, at the platoon and company/team levels. It includes the capability to support battalion task force (and perhaps brigade) training as command field exercises or as portions of larger exercises. Research conducted during these projects determined that users often have little formal training and practical experience in training development; thus, they benefit from having guidelines and automated tools to help them produce high quality exercises. Among the key lessons learned from the CITT projects conducted to date are that users can, with the assistance of the CITT, develop quality structured training exercises and their associated TSPs. To do this efficiently and effectively the “user needs to have a good, working understanding of the concepts, principles, and practices of structured training development and delivery” (Gossman et al., 2000, p. 29).

² This project recognizes that unit commanders and other unit trainers have historically developed their own training. The emphasis of user-produced TSPs is actually on providing appropriate tools and aids to support their efforts and to assist them in producing high-quality, effective and efficient training for all training environments.

The CITT, as a prototype exercise and TSP development tool, provides access to extensive user-oriented information on the CCTT and how to train units in the CCTT. This includes access to a library of existing TSPs and detailed guidelines and procedures for modifying these TSPs and for developing similar ones. The CITT also provides procedures for preparing electronic files required for initialization and control of exercises in the CCTT. The prototype CITT has been well received in two rounds of formative evaluation with users, and there are indications that a CITT-like tool will be highly beneficial in addressing the training issues identified above. Before CITT capabilities are expanded to other training environments, however, there are several underlying research and development issues related to assessment and management of user-produced TSPs that need to be addressed:

- What are the training environments in which user-produced TSPs are required?
- What components must be included in TSPs developed for different or combined environments?
- If TSP development is distributed among users, how will it be standardized, controlled, or managed?
- How will users collaborate to produce TSPs for large-scale exercises combining different sites or training environments?
- How will TSPs be judged as complete and acceptable for inclusion in a user-accessible library?
- How will access to such a library be controlled?
- What tools and aids are currently available to support distributed TSP development, and what tools and aids are needed?

This report addresses this set of issues through design of methods for assessing and managing user-produced TSPs at brigade and below levels, along with specification of initial prototype user tools. As such, it represents a further extension of the principles of structured training to an environment in which users are the primary developers of training.

Army Training Information Architecture

The third initiative that impacts user-produced training is the ATIA under development by TRADOC. Based on the Army Training XXI Campaign Plan (TRADOC, 1997), the ATIA is a specification for a system of systems that will be developed over the next several years and will provide the blueprint for future training systems in the Army. It is a standards-based, data-driven, object-oriented system based on the Army's SAT process and applies to Army training as described in TR 350-70 (DA, 1999). As illustrated in the top-level node tree for the ATIA Operational Architecture depicted in Figure 2, the ATIA specifies activities for designing, developing, implementing, assessing, and managing collective training including the user-produced exercises and TSPs considered in this project. According to the Army Training XXI Campaign Plan,

The ATIA will employ state-of-the art information technologies in a fully integrated, networked, and internetted training support system to provide realistic, timely, user-responsive, and cost-effective training for units and individuals. The objective Army training system will provide integrated and distributed training information and training management support; comprehensive, configurable, content-rich training products and media; integrated synthetic training tools and devices; and reengineered training processes – all in an open system capable of continuous improvement through the infusion of emerging technologies and functional requirements. The ATIA will support the entire training domain – from tools to training development to training methods – while maintaining the quality of our battle-focused training paradigm. (TRADOC, 1997)

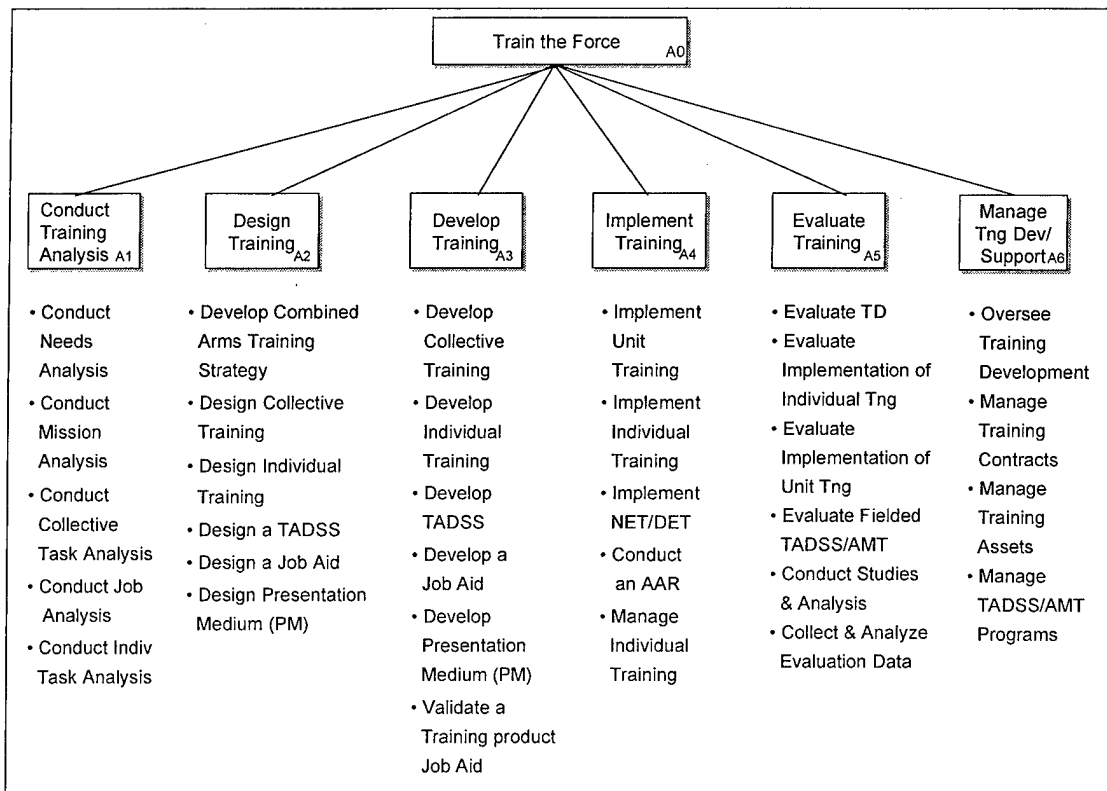


Figure 2. Top-level node tree – Army Training Information Architecture Operational Architecture (DA, 2000a).

The ATIA is being developed by TRADOC under a set of principles and guidelines that provide the strategic guidance for a coherent technical framework for the future ATIA system. The ATIA and its principles and guidelines are of particular relevance to this project in that they provide constraints on it, particularly as related to user tools and management and assessment of TSPs, in that our findings and recommendations must address and fall within the ATIA. The following ATIA principles are of particular relevance:

- Data access should be logically centralized, but physically dispersed.
- Software applications and data should be segregated.
- Data content should be modifiable on the fly and all abstractions of data (e.g., meta-data) should be extensible and user-, not programmer-, oriented.

In addition, the following guidelines offer further direction:

- Systems and subsystems will be user-focused and user-friendly.
- Systems and subsystems will be interoperable.
- The ATIA training management systems will provide for one-time data entry to update all related systems' databases.
- All training information will be available and tailorable through training management systems.

Thus, user-produced TSPs, viewed as data, need to satisfy these guidelines and requirements, as must any user tools (i.e., applications).

The prospect of relying increasingly on structured, user-produced training raises questions about how the resulting TSPs should be developed and managed. Automation is part of the answer, but tools that assist with these functions must be designed within the constraints imposed by the ATIA. Together, these factors demand timely research into how the Army can integrate user-produced TSPs effectively into existing training approaches. The ARI has responded by initiating and guiding the present project.

Project Objectives and Tasks

Four major objectives from the project Statement of Work (SOW) (ARI, 1999) drove the project activities:

- Design a method for specifying the collective training exercises that would comprise a "core set" for training combat arms organizations at brigade and below including the development of at least one example core set. The specification should consider unit type and echelon, training mission, training environment, and TADSS.
- Determine the data components that comprise a TSP for collective exercises.
- Design comprehensive methods for assessing and managing user-produced TSPs for collective training.
- Identify selected tools/aids for assessing and managing user-produced TSPs for collective training.

These objectives were addressed through completion of several research tasks:

- *Task 1.* Determine requirements for a core set of user-produced TSPs in various training environments at present and for the next five years including the identification of specific TADSS as well as identification of the types of missions and exercises for which user-produced TSPs are expected to be required. This task focuses on training for brigade and below combat operations.
- *Task 2.* Identify the components required for TSPs in live, virtual, constructive, and combined training environments for collective training exercises.
- *Task 3.* Design a method for assessing and managing user-produced TSPs over the next five years.
- *Task 4.* Identify prototype tools/aids for assessing and managing user-produced TSPs.

As the project proceeded these tasks were refined somewhat based on input from the contracting officer's representative (COR), on the combined expertise and experience of the team, and on outcomes that we could realistically expect to produce. Task 1 changed to developing a process or methodology for identifying the TSPs (or exercises) that need to be included in a "core set" of exercises rather than specifying the actual core sets. Task 2 was further defined as identifying the TSP components to a level sufficient to develop database specifications for them. We made no attempt, however, to develop the actual specifications. Task 4 evolved into identifying the various users³ of the TSP and the applications or tools that each will need in order to develop and execute collective training exercises effectively and efficiently. Prototype screen shots illustrating the functionality of one tool were also developed.

Purpose and Organization of the Report

The purpose of this report is to describe the research methods and outcomes of the project to examine methods for assessing and managing user-produced TSPs. As described above, this included examining TSP components, a method for specifying core sets of TSPs, issues related to TSP assessment and management, and development of prototype tools for the various TSP users identified.

The report is organized as follows:

- *Data Collection.* This section describes the data-collection methods we employed for collecting the data that underlie the project as a whole. (Methodological activities related to specific project tasks, e.g., development of the TSP core set identification process, are described within the context of presenting the task activities).

³ As employed in this context, "user" refers not only to the developer of the TSP, but to all personnel who will make use of the information contained in the TSP to execute, or support the execution of, the exercise.

- *TSP core set identification.* This section describes the methodology that was developed to identify the specific exercises that could be included in a core set of exercises for various combat organizations. We also provide specific examples of the core set of exercises that would be derived using the methodology developed.
- *TSP component and element identification.* This section describes the process and product of the analysis to identify the data elements that would be included in a TSP for collective training exercises for various training environments.
- *User-produced TSP management and assessment.* This section identifies issues and concerns related to management and assessment of user-produced TSPs over the next five years based upon our analysis of the ATIA.
- *User tools.* This section identifies a set of tools for the various TSP users and provides suggestions for their development and use.
- *Summary and Conclusions.* This section presents a summary of the project findings and a set of recommendations for addressing management and assessment of user-produced TSPs at present and for the next five years.

Data Collection

Initial project activities consisted of identifying and obtaining documentation relevant to structured training, TSPs, and Army training in general that would support all project tasks. We began with Field Manual (FM) 25-100 – *Training the Force* (DA, 1988), FM 25-101 – *Training the Force: Battle Focused Training* (DA, 1990), and TR 350-70 – *Systems Approach to Training Management, Processes, and Products* (DA, 1999). These three provide the Army policies and procedures within which user-produced TSP development, assessment, and management will occur. We subsequently identified and obtained additional documentation using a spiraling approach in which each additional document would point to several others that were obtained and considered. We examined ARI reports, especially those related to structured training and to the CITT project; documentation describing the ATIA; FMs and Mission Training Plans (MTPs); general references on simulation-based training; examples of contractor- and user-produced exercise TSPs; and numerous military and non-military Internet sites. All together, more than 120 documents, both paper-based and electronic were examined; a complete list is included in Appendix B.

Approximately 60 days into the project, relevant individuals and groups whom the project team wished to interview were identified. Our intent was to talk to a wide variety of personnel who play a role in exercise and TSP development, implementation, assessment, and policy making. Interviews were arranged through the project COR. We developed a set of interview guidelines and questions that served as the basis for each interview. These were modified as necessary for the individual/group being interviewed. The interview questions related to four broad areas of interest: What did the interviewees think of the basic premise of users developing TSPs themselves? What components should a user-produced TSP include? How should user-produced TSPs be assessed? How should user-produced TSPs be managed and distributed? The interviews were loosely structured around these areas; however, they were conducted more as

group discussions than question/answer sessions. Each interview was conducted by at least two project team members with most being conducted by three or more. The same team member served as lead interviewer for all interviews, although all members asked questions as appropriate at any time during the interview. All interview participants were told that any information they provided was not for attribution. Each team member took notes and recorded his/her observations. Following the interview, the team met to debrief and discuss the interview findings.

We conducted a total of 28 interviews (22 in person; six by telephone) involving a total of 41 participants. The organizations represented by the participants included TOE Army units, TRADOC Deputy Chief of Staff for Training (DCST), Army Training Support Center, the Combined Arms Center, Directorate of Training and Doctrine Development at Fort Knox, CCTT and Air Network (AirNET) simulation centers, the National Training Center, a training support brigade, a non-commissioned officer academy, an observer/controller (O/C) team, the Force XXI Systems Engineering and Technical Assistance team, and the contractor team developing the CITT.

TSP Core Set Identification

The SOW (ARI, 1999) directed the project team to explore TSP requirements for U.S. Army combat arms units at brigade and below through the year 2005. We interpreted this requirement as having two components – development of a process for identifying core sets of exercises for various organizations and identification of the data components that comprise a TSP⁴ for collective training exercises. This section describes the core set identification process.

Core sets of training exercises, even if not by name, have long been used to meet the basic training needs of U.S. armed forces (MTP Situational Training Exercises [STX] for example). The concept derives from the premise that standardizing doctrine, and thus training, clearly promotes success on the battlefield. In this project, concerns about training utility led to the conclusion that a core set should be both practical – addressing the real needs of existing units – and exemplary – providing examples from which units can model their own TSPs. In addition, the TSPs in the core set should provide broad mission and task coverage, serve a wide audience of units within the unit type, and adhere to the principles of structured training described previously. Thus, the core set is defined as a set of exercises that serves the basic training needs of a unit by providing a repository of training exercises from which units can select those that best serve their needs. It is important to note that the core set does not specify a training strategy. Rather, exercises in the core set need to support any training strategies that may be developed.

⁴ The terms “exercise” and “TSP” are used consistently throughout this report to refer to similar, although not identical, items. An exercise is the actual training event consisting of cues or stimuli, unit actions, and feedback. The TSP is the documentation that supports the conduct of the exercise.

A Process for Identifying Core Set Exercises

The project team set out to develop a logical, systematic process for specifying collective structured training exercises that would comprise a core set. It is important to emphasize that the process is not a means of developing training, but rather a way to determine what training should be developed. The process systematically identifies the structured training exercises that might comprise a core set; it does not include their development. To accomplish this, the process identifies potential training methods and training content. It then matches the methods with content based on value-related criteria residing in such questions as: Is the training general enough to serve the needs of a majority of units within the unit type? Do the expected benefits of a given piece of training justify the expense of the TADSS employed?

The process begins by considering a broad domain of potential training and narrows that domain into a smaller, more concentrated set of training alternatives using the five steps shown in Figure 3. Before describing these steps, several points need to be addressed. First, following the process will lead to “a” core set, not “the” core set. There is no single solution. Different individuals will identify different exercises for the core set based upon their expertise, experience, and viewpoints. Second, it is important to remember that the process results in the identification of the exercises that could comprise the core set. Producing an actual core set of TSPs requires the additional activities of designing exercises and producing the TSPs. These activities require in-depth analyses of training needs, training options, and development capabilities.

Step 1. Specify Unit Type. In step 1 the unit type for which a core set will be developed is specified. Unit types are defined by branch and echelon, and each specific unit type will have its own core set of training exercises. In the actual core set identification, analysts would begin with the unit type as a given – they would know, for example, that they were developing a core set specification for a tank battalion or a rifle platoon. The fact that there is no analysis required is illustrated by the broken line around Step 1 in Figure 3.

Step 2. Select Viable Training Methods. In step 2 the viable training methods for a given unit type are selected. A training method is defined as a specific exercise type being conducted in a specific training environment. An STX-Live and Map Exercise (MAPEX)-Constructive are examples of training methods. To identify viable training methods, one needs to begin with the domain of all conceptually possible training methods. This domain consists of all training methods that could occur even though some are illogical, impractical, or even physically impossible to implement.⁵ Considering all the training methods, however, reduces the probability that someone attempting to specify core set exercises for a unit would inadvertently omit ones that should be included.

⁵ There are numerous examples of exercises that are not clearly logical, practical, or possible: An armor platoon STX conducted in constructive simulation is illogical and physically impossible. An infantry brigade MAPEX conducted in constructive simulation is impractical. An armor brigade field training exercise (FTX) conducted in the virtual simulation, CCTT, is physically impossible due to the number of simulators the exercise would require.

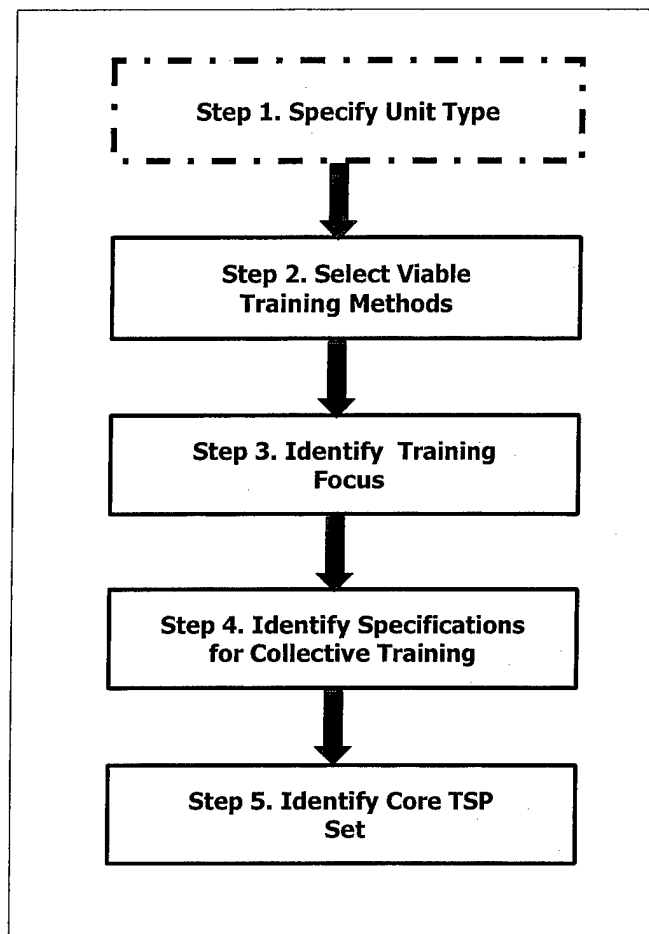


Figure 3. The core training support package set identification process.

The domains of all possible training methods identified for Armor and Mechanized Infantry units, based on exercise types identified in FM 25-101 (DA, 1990), are illustrated in Figure 4. Similar domain identification could easily be completed for other unit types. (We recognize that technological advancements are increasing the flexibility and interoperability of the Army's simulations, and that additional exercise types, especially ones combining the various environments will be developed in the future. This could affect the domain of possible training methods depending upon factors that exist at the time a core set is specified.)

To complete Step 2, the analyst selects the appropriate row of the matrix, and for each of the potential training methods represented by the cells in the row, poses three questions: Does the exercise type fit the echelon? Does the environment support the exercise type? Is the exercise type efficient in that environment? Examples of rationales that further illustrate how these questions would be considered are presented in Table 1. Exercises that do not meet the criteria are dropped from future consideration as training methods appropriate for the core set. Those remaining are retained for further analysis.

			Live										Virtual										Constructive									
			M A P E X	T E W T	F C X	C P X	S T X	C F X	L C X	F T X	L F X	M A P E X	T E W T	F C X	C P X	S T X	C F X	L C X	F T X	L F X	M A P E X	T E W T	F C X	C P X	S T X	C F X	L C X	F T X	L F X			
Armor	Platoon	Tank Plt																														
		Scout Plt																														
	Mortar Plt																															
	Med Plt																															
	Maint Plt																															
	Support Plt																															
	Company	Tank Co																														
		Armor Tm BRT																														
Battalion	Tank Bn																															
	Armor TF																															
Brigade	AR Bde																															
Mech Infantry	Platoon	Mech Inf																														
		Scout Plt																														
	Mortar Plt																															
	Med Plt																															
	Maint Plt																															
	Support Plt																															
	Company	Mech Co																														
		Mech Tm BRT																														
Battalion	Mech Bn																															
	Mech TF																															
Brigade	Mech Bde																															

MAPEX - Map Exercise

TEWT - Tactical Exercise Without Troops

FCX - Fire Coordination Exercise

CPX - Command Post Exercise

STX - Situational Training Exercise

CFX - Command Field Exercise

LCX - Logistical Coordination Exercise

FTX - Field Training Exercise

LFX - Live Fire Exercise

Figure 4. Matrix of possible training methods for armor and mechanized infantry units.

To illustrate Step 2, the project team used the above questions to determine the viability of training methods for armor units. This process filtered out those techniques that did not meet the proposed criteria for one reason or another. The result of this analysis is shown in Figure 5 where cells containing a “•” indicate viable training methods.

			Live										Virtual										Constructive									
			M A P E X	T E W T	F C X	C P X	S T X	C F X	L C X	F T X	L F X	M A P E X	T E W T	F C X	C P X	S T X	C F X	L C X	F T X	L F X	M A P E X	T E W T	F C X	C P X	S T X	C F X	L C X	F T X	L F X			
A r m o r	Platoon	Tank Plt	●				●		●	●							●		●													
	Company	Tank Co	●	●	●		●		●		●		●	●			●		●													
	Battalion	Tank Bn	●	●	●	●		●	●	●		●	●				●		●							●			●			
	Brigade	AR Bde	●	●	●	●		●	●	●		●	●				●		●							●			●			

Figure 5. Viable training methods for armor units.

Step 3. Identify Training Focus. Step 3 of the process begins to identify the actual content of the core set by identifying tasks and task sequences upon which the core set will focus, and by grouping them into realistic storylines. In later steps, this information will be combined with the results of Step 2 to identify the specific exercises that will comprise the core set. Step 3 begins by establishing the domain of potential training content; it then filters and organizes that content to generate a list of training topics. These topics maximize the utility of the core set of TSPs by directing attention to critical and frequently performed missions and tasks.

Table 1

Sample Rationales for Determining the Viability of Training Methods

Criteria	Sample Rationales
Does the exercise type fit the echelon?	<ul style="list-style-type: none"> ➤ The FTX is intended for battalion and brigade echelon training, but not for company and platoon. ➤ The STX is intended for company and platoon echelon training, but not for battalion and brigade. ➤ The CFX is intended for battalion and brigade echelon training, but not for company and platoon.
Does the environment support the exercise?	<ul style="list-style-type: none"> ➤ CCTT can support exercises such as a company STX, a brigade CFX, and a battalion FTX because there are sufficient simulators for the number of participants involved. ➤ CCTT should not be used to support a battalion CPX because the staff participants in this exercise do not require CCTT's virtual portrayal of the battlefield. ➤ The live training environments, or ranges, as they currently exist are not large enough or intended for a brigade level LFX; these ranges, however, are used to enable the LFX at the company and platoon echelons.
Is the exercise efficient in the environment?	<ul style="list-style-type: none"> ➤ The MAPEX is more efficiently conducted in a live environment (i.e., using a paper map) than in a constructive environment. Constructive simulations require resources and detailed coordination that are not needed in the live setting. There are advantages to utilizing constructive simulation for MAPEX-like training; however, these events more closely resemble wargaming operations and are better classified as CPX training. ➤ It is far more efficient for a brigade to conduct a CPX in constructive simulation than it is for a brigade to execute a completely live CPX. It is far more efficient to use constructive simulation to assess casualties, compute movement times, and account for environmental factors, than it is to use the myriad of controllers a completely live CPX would require. ➤ A battalion FCX with the narrow objective of improving the battalion's ability to shift the priority of mortar fires is more efficiently conducted in virtual, rather than in a live simulation due to the great expense associated with executing the tasks live.

Note. CCTT = Close Combat Tactical Trainer; CFX = command field exercise; CPX = command post exercise; FCX = fire control exercise; FTX = field training exercise; LFX = live fire exercise; MAPEX = map exercise; STX = situational training exercise.

Consistent with Army doctrine that training be task-based, it makes sense to identify the initial domain of training content in terms of the tasks performed by the unit type for which the core set is being specified. Our recommendation, at least at this time, is to start with the appropriate MTP that specifies the collective tasks as well as leader tasks and supporting individual tasks. Other sources, such as the Army Universal Task List (DA, 2000b), which is under development, may eventually provide a more comprehensive and useful documentation of training requirements. This overall domain of training requirements (tasks) is filtered to identify those upon which training should actually focus by asking the following: Should this task be the

focus of an exercise or will it be trained more efficiently in the context of another task? This identifies the tasks which will become the focus of the core set. An example of this activity, completed for a tank platoon, is shown in Figure 6.

ARTEP 17-237-10-1

MISSION TRAINING PLAN FOR THE TANK PLATOON

Headquarters
Department of the Army

July 1996

This training publication is approved for public release;
its use and distribution are unlimited.

Tank Platoon Tasks

Conduct Troop-Leading Procedures

Conduct Assembly Area Activities

Conduct Linkup

Establish an Observation Post

Conduct Bypass Operations

Conduct Convoy Escort

Coordinate/Conduct a Passage of Lines Forward/Rearward

Conduct Tactical Movement

Conduct a Tactical Road March

Execute Actions on Contact

Destroy an Inferior Force

Assault an Enemy Position

Conduct an Attack by Fire

Conduct Overwatch/Support by Fire

Conduct Reconnaissance by Fire

Follow and Support

Coordinate/Assist a Passage of Lines Forward/Rearward

Disengage from the Enemy

Conduct a Deliberate Occupation of a Platoon Battle Position

Conduct Hasty Occupation of a Platoon Battle Position

Conduct a Perimeter Defense

Conduct a Platoon Defense

Conduct a Relief in Place

Displace to a Successive/Alternate Platoon Battle Position

Conduct Breach Force Operations

Conduct Operational Decontamination

Cross an NBC Contaminated Area

Emplace and Retrieve a Hasty Obstacle

Conduct Passive Air Defense Measures

Conduct Consolidation and Reorganization Activities

Conduct Resupply Operations

Selection Criteria

- ☒ Would You Develop an Exercise Specifically to Train the Task?
- ☒ Could this Task be More Efficiently Trained in the Context of Another Task?

Focus Tank Platoon Tasks

Conduct Linkup

Conduct Bypass Operations

Conduct Convoy Escort

Coordinate/Conduct a Passage of Lines Forward/Rearward

Destroy an Inferior Force

Assault an Enemy Position

Conduct an Attack by Fire

Conduct Overwatch/Support by Fire

Disengage from the Enemy

Conduct a Deliberate Occupation of a Platoon Battle Position

Conduct Hasty Occupation of a Platoon Battle Position

Conduct a Platoon Defense

Displace to a Successive/Alternate Platoon Battle Position

Conduct Breach Force Operations

Conduct Operational Decontamination

Conduct Consolidation and Reorganization Activities

Conduct Resupply Operations

Figure 6. An example of task filtering for a tank platoon.

As illustrated in this figure, the tank platoon MTP was used to derive the collective tasks that comprise the potential training domain for the tank platoon core set. Each task was examined in light of the specified filters to produce the reduced list of tasks shown. These tasks serve as the training content upon which the core set focuses. It is important to point out, however, that even though some tasks are not selected as focus tasks, this does not mean that they will not be included in the training. It simply means that they will be trained in the context of an exercise that focuses on another task. In the example shown, “Conduct Troop-Leading Procedures” was not selected as a focus task since it will be trained in the context of virtually every exercise. Similarly, “Conduct Tactical Movement” can be trained within the context of exercises that focus on broader tasks, such as “Assault an Enemy Position.”

Once the tasks upon which the core set will focus have been identified, the next activity is to group them into doctrinally sound combinations that can be sequenced into realistic battlefield storylines. Consistent with the Army’s “train as you fight” ethos, storylines must reflect the manner in which events truly unfold on the battlefield. This activity is somewhat subjective, and

there is no single, correct outcome. We have, however, developed guidelines to assist its completion.

First, analyze the tasks to determine how they actually occur in battlefield conditions. This selects those tasks that reflect broad and commonly trained missions. Next, analyze the tasks for possible groupings that can be trained together. The identified missions and other task groupings are then used to create realistic training scenarios. Keep in mind that, at this point, training method is not yet a factor in the analysis. Allowing the training method (the simulation environment and exercise type) to qualify decisions that determine storyline structure will create storylines that are artificial to the extent that the training method constrains battlefield conditions and performance. This will cause difficulties in mapping storylines onto training methods in Step 5. An example of this activity, again using the tank platoon, is shown in Figure 7.

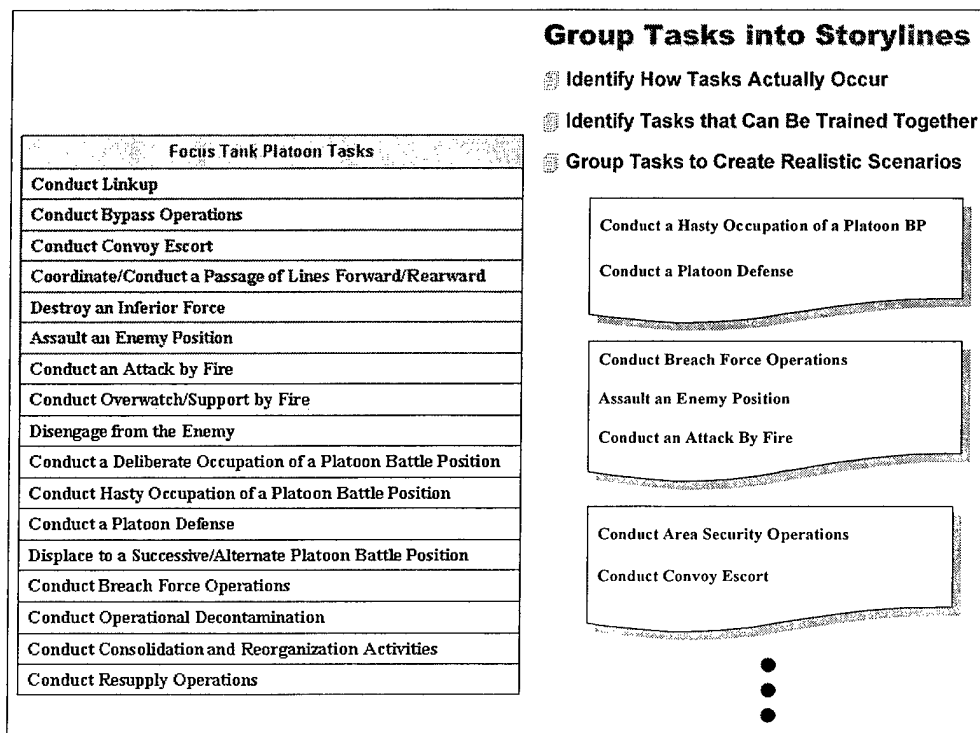


Figure 7. An example of identifying storylines for a tank platoon.

As this example illustrates, the 16 tasks selected during the previous activity were analyzed to create a more limited number of storylines for the core set. Most of the tasks could have been trained as stand-alone operations and can represent entire storylines resulting in a large number of exercises. Applying the specified guidelines, however, allowed the tasks to be grouped into storylines, examples of which are shown.

Step 4. Identify Specifications for Collective Training. Step 4 identifies specifications for core set training by assigning training methods to the storylines identified in the previous step. At this point, we are still not identifying specific exercises; rather, we are broadly specifying the types of exercises that would be appropriate for each storyline. To accomplish this, one analyzes

the storylines to identify which of the viable training methods are appropriate for each. The decisions rest upon how well the environment and type of exercise support training of the tasks included in the storyline considered. This analysis boils down to two questions: Does the training method support the tasks to be trained? Will the resulting training be efficient? Answering these questions entails deciding how effectively the tasks can be trained in a given TADSS environment⁶ and whether the training is the best way to accomplish the training objectives. For each storyline, the answers to these questions will determine which training methods the core set should employ to train that content, thereby determining the specifications for core set training. An example of the results of completing Step 5 for tank platoon storylines is shown in Figure 8.

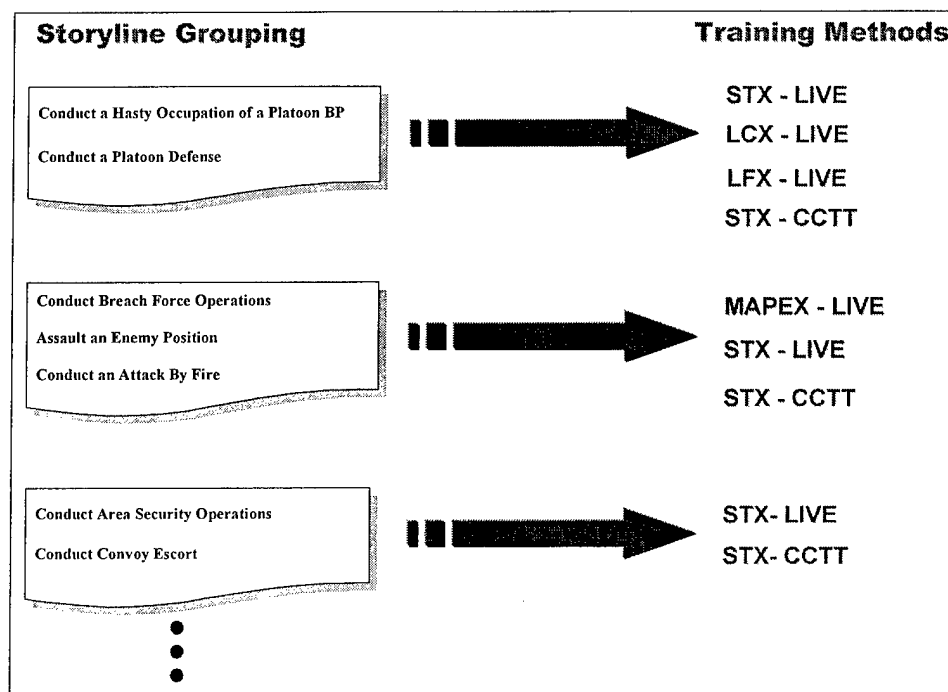


Figure 8. An example of identifying specifications for collective training for a tank platoon.

As illustrated, the analysis of the storylines for the tank platoon identifies the specific training methods, in terms of exercise type and environment, that are likely to be effective and efficient in training the storyline. The exercise types are ones that were found to be viable in Step 3 for the live or virtual environments. No constructive training had been deemed viable.

Step 5. Identify Core TSP Set. The final step in the process of developing a core set of TSPs entails specifying the actual set of exercises and TSPs that reflects the results of Steps 1

⁶ Burnside (1990) provides a method for making a task-by-task assessment of which collective tasks can be performed in a given simulation environment. The work dealt specifically with selecting MTP tasks for the Simulation Networking (SIMNET) system (Alluisi, 1991). However, the method could be used to produce an index of training fidelity for each task performed in any given TADSS.

through 4. This specification is based on practical considerations that occur at the time the specification is made, such as availability of exercise development resources and consideration of the most pressing needs of the unit type for which the core set is being developed. Ultimately, the goal is to develop exercises for all of the core set training specifications identified in Step 4. It may, however, be impractical to accomplish this all at once. In any event, this step turns the general specifications of Step 5 into specific exercises. That is, for each training method and storyline considered by the process, a list of exercises that trains them is developed and specified. Figure 9 shows the outcome of Step 5 for one of the storylines of the tank platoon. The storyline has been named “Deliberate Attack,” and one possible grouping of exercises to train it is shown.⁷

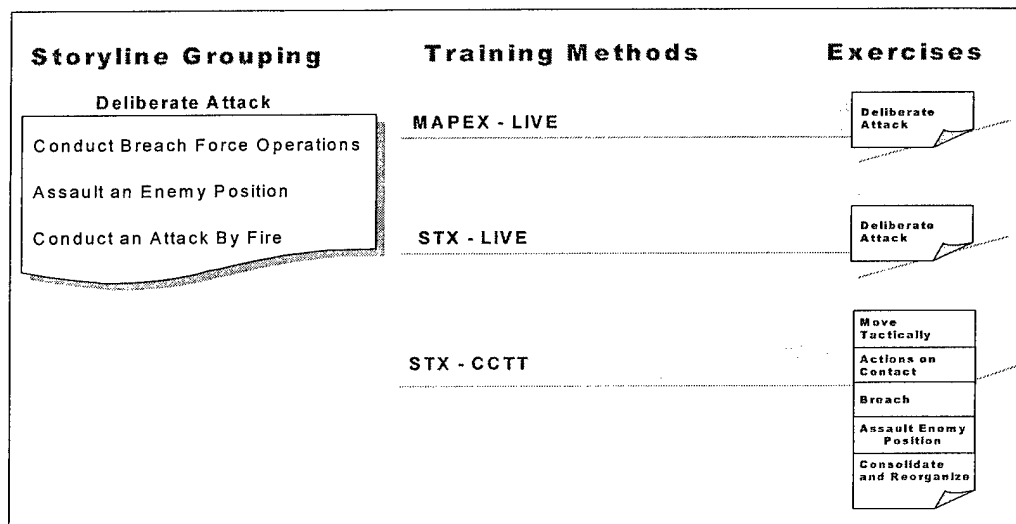


Figure 9. An example of specifying core set training support packages for a tank platoon.

TSP Component and Element Identification

The second aspect of the SOW’s direction to explore TSP requirements for U.S. Army combat arms units at brigade and below through the year 2005 is the identification of the data components that comprise a TSP for collective training exercises. For the purposes of this project, data components refer to the information items that make up the TSP as opposed to the contents of those items. Component identification is critical to future Army training in a number of ways. First, the components themselves must support structured training as it has evolved over the past decade (Campbell et al., 2000). Thus, the information in the TSP must support the identification of the stimuli or cues that elicit collective task and supporting individual task performance and the performance feedback that is vital to structured training. Second, the use of

⁷ It would have been equally feasible to break the STX-Live Deliberate Attack exercise into smaller exercises as was done for the STX-CCTT. The breakdown shown represents one way to break out the training. This further illustrates that there is no single correct “solution” to core set identification.

a common set of TSP components will facilitate sharing TSPs since users will be familiar with and have a common understanding of the information in the TSP. Similarly, it will facilitate exercise execution in that the various personnel involved in executing an exercise will also have a common understanding. Finally, having a commonly accepted set of TSP components will facilitate the development of the user tools or applications that comprise the ATIA since several of the Automated Information Systems identified therein will employ TSPs, both proponent- and user-developed.

Before beginning the discussion of how the project team developed the TSP component listing produced in this project, several clarifying points need to be made. First, we had no preconceived ideas concerning whether a single set of components or different sets would be needed for TSPs developed for different exercises. Can the same set of components support exercises for different training methods and environments and different TADSS or are the differences so great as to require different sets? Second, we recognized the need to develop the component set independent of any single user of the TSP. If we were to identify all required components, we needed to be mindful of all potential TSP users. Finally, we needed to identify a component to a level that would support development of database specifications for it. Although it was not our task to develop the actual database specifications, for the components to have utility, they must be at a sufficiently detailed level so that specifications can be developed.⁸ This is particularly critical to support future training systems as outlined in the ATIA.

The TSP Component Identification Process

Figure 10 depicts the process the team employed to identify the components of a TSP for a collective training exercise. While the process is shown as five discrete steps leading to the development of the list, in actuality there was a great deal of overlap. We were continuously going back and revising earlier products (TSP component names and definitions) based on identifying and delineating other components and definitions. However, for presentation purposes, it is less confusing to think in terms of the steps shown.

The foundation of the process was data collection which continued throughout. As described in the data collection section, this activity consisted of obtaining and examining relevant documentation, interviewing military, government, and civilian personnel involved in collective training, and in examining examples of TSPs produced by units, training support units, and contractors. Altogether, a total of 16 TSPs were obtained and examined⁹. Of the 16, 7 were designed for live exercises, 6 for constructive exercises, and 3 for virtual exercises. The key Army documents related to TSP components are TR 350-70 *Systems Approach to Training Management, Processes, and Products* (DA, 1999) and Training Circular (TC) 25-10 *A Leader's Guide to Lane Training* (DA, 1996a). We also obtained and examined the Army's Automated

⁸ As used in this report, database specification refers to defining the data type for each element and determining table structures and relationships.

⁹ The TSPs examined represent a broad range of user- and contractor-produced TSPs without allowing any particular type to dominate. For example, although we had access to numerous Simulation Networking (SIMNET) and CCTT exercise TSPs, only one was included in the 16 that were examined.

Systems Approach to Training software and the Standard Army Training System (SATS) software. Both include TSP development functions and, therefore, provide a specification of the TSP components included in each.

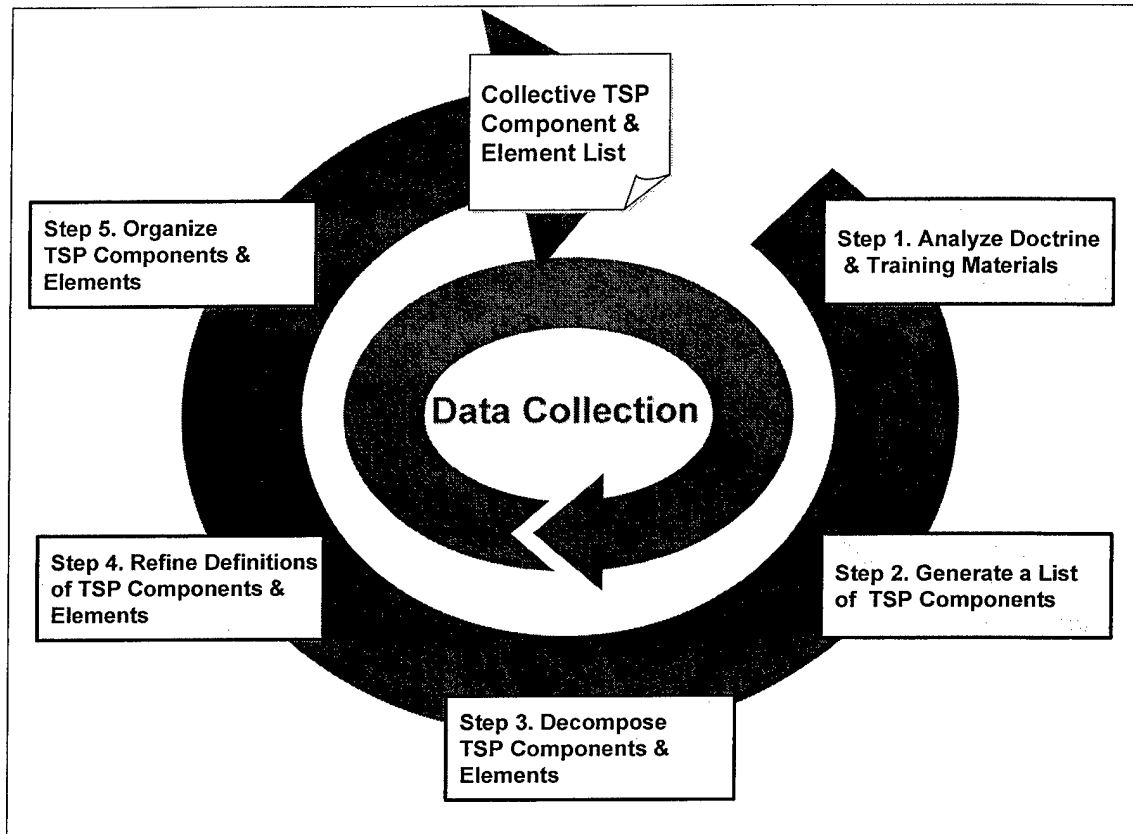


Figure 10. The training support package component identification process.

The TR 350-70 (DA, 1999) provides a well-conceptualized model of TSP components for collective TSPs, termed Warfighter TSPs in the regulation. The range of components theoretically covers the full array of those required by the various exercise types and environments, but at a fairly high level. The components are specified in very general terms that collapse across numerous, more specific “sub-components,” and it is these sub-components that would be required to produce the precision necessary to develop database specifications. The component list from TR 350-70 is included in Appendix C.

The TC 25-10 (DA, 1996a) deals strictly with lane training exercises and does not address the other types of exercises that figure prominently in the present effort to identify TSP components. The training circular was of value primarily in that it provided a time-tested, doctrinal model of a TSP which provided a second source for comparison to other doctrinal sources and to the example TSPs obtained. The listing of components contained in TC 25-10 is included in Appendix D.

Step 1. Analyze Doctrine and Training Materials. As shown in Figure 10, the first activity of the process was to analyze the various doctrinal and TSP materials. This was accomplished by “crosswalking” the various sources against one another. The TR 350-70 (DA, 1999) was compared to TC 25-10 (DA, 1996a) to determine components common to both or unique to one or the other. The TR 350-70 was also compared to the example TSPs using the same method. In both instances, it proved difficult to make comparisons with a great degree of confidence because of the different names used as well as the differences in level of specificity employed. Sample TSP components of even similar natures and functions exhibited great variance. In the end, we determined that every sample TSP contained components that conformed, to a greater or lesser degree, with those of the TR 350-70 and TC 25-10 models, and there were many components that simply didn’t conform to the models at all. Based on the comparison, however, we were able to develop our initial list of TSP components which provided the starting point for the remainder of the components identification process.

Step 2. Generate a List of TSP Components. With the list produced in the above activity as a starting point, the project team began to identify a comprehensive list of TSP components based on its own combined knowledge and experience in collective training in a variety of environments. Components were identified without reference to any specific user of the TSP, although this sometimes proved difficult. We also made no distinction, at this time, between components for live, virtual, or collective exercises – we simply set out to list all of them. In fact, it was during this activity that we began to think seriously about the possibility that a single component list might apply to all TSPs in all environments.

The actual process of developing and refining the component list involved a series of “brainstorming” sessions involving all of the team members. Components were proposed, named, modified, renamed, remodified, and decomposed into smaller components in an effort to produce a comprehensive list. This process was repeated over the course of numerous sessions resulting in the list that served as the basis for the next activity.

Step 3. Decompose TSP Components and Elements. During this activity, the project team began to consider the components from the standpoint of how they would be “databased”; that is, for each component, we asked the question: Is this component identified at a level sufficient to allow it to be specified in terms of designing a database of components? It was while completing this activity that the project team began to see that some of our previously identified components actually consisted of multiple components from a database standpoint. This helped our further refinement of the list and led to a slight change in terminology. We continued to use the term component; however, it came to signify a group of TSP elements. The term “element” was used to indicate a piece of a TSP that had been identified at a level sufficient to develop database specifications for it. This does not imply that the element consists of a single datum; it simply means that there is no reason to decompose it further to use it in a user tool or application.

This activity was conducted for all of the components identified previously leading to a refined list that consisted of components and elements. It also marked the end of the actual identification process; remaining activities were directed at providing further definition or organization of the components and elements.

Step 4. Refine Definitions of TSP Components and Elements. The next step in the identification process was to review each component and element identified and produce a concise definition or description of it. The purpose of this activity was to define the components/elements from the standpoint of the TSP users, which required a broader perspective than from the standpoint of the project team alone. This step served two important functions. First, producing a commonly agreed-upon definition significantly clarified many of the components/elements. Often members of the project team would have slightly different connotations for a particular element, which were not apparent until this step. Coming to an agreed-upon definition or description helped focus our thinking. It also helped to further identify elements since, occasionally, the discussion of a component or element would make it clear that we were dealing with more than one.

The result of this step was a component/element list that satisfied the requirements of the project. The list was not, however, organized in any particular manner, and the team realized that some organization would be helpful for presentation of the list to interested stakeholders. This was the function of the next activity.

Step 5. Organize TSP Components and Elements. The final activity of the TSP components identification process was to group the components and elements identified to this point to facilitate their presentation to various interested parties. After examining existing categorization schemes, such as that in TR 350-70 (DA, 1999), the team decided to place the components/elements in categories related to their function in an exercise. As with previous activities, this was difficult to do without reference to a particular user. However, in the end, we were able to produce a categorization scheme that serves all users and that will assist in the development of the user tools and applications discussed later in this report. The list of TSP components and elements is shown in Figure 11. (The complete list including definitions and examples is included in this report as Appendix E.)

Validation of the TSP Component and Element List

Validation of the project's list of TSP components included several reviews to verify that the list of TSP components meets the specifications for its design, and that it has utility.

The first review examined whether the list produced is consistent with current Army TSP documentation. Consistency does not mean that the components mirror other Army lists either in components included or organization; rather, it means that our list accounts for all the functions served by the components in the Army lists. To make this verification, the project team conducted crosswalks that compared the project list with the lists provided by TR 350-70 (DA, 1999) and TRADOC's *Train the Force Integrated Definition Model: Create Collective War Fighter Training Support Packages* (DA, 1996b). Each crosswalk showed that we covered the intended functions of the Army lists, and no revisions were made based on this limited review. The results of these crosswalks are contained in Appendixes F and G respectively.

TSP Identification	Exercise Control Materials	Force Structure
Exercise Identifier	Exercise Storyboard	BLUFOR Task Organization
Exercise Title	Event	OPFOR Task Organization
Echelon(s)	Cues	White Elements
Unit Type	Unit Responses/Tasks	Green Elements
Unit Designation	Exercise Execution Timeline	Classes of Supply
Mission Type	Exercise Support Personnel Guidelines	Class I
Exercise Type	Role	Subsistence Items
TADSS	Duties	Nomenclature
Exercise Proponent	Location	National Stock Number
TSP Developer/POC Information	Tactical Purpose	Unit of Issue
Developer/POC Name(s)	Execution Guidance	Gratuitous-issue Health Items
Developer/POC Unit Identification Code	Unit Starting Locations	Nomenclature
Developer/POC Phone Number(s)	Unit ID	National Stock Number
TSP Development Status	Unit Type	Unit of Issue
Status	Grid Coordinate	Gratuitous-issue Comfort Items
Date	Control Measures List	Nomenclature
Exercise Overview	Control Measure Type	National Stock Number
Exercise Narrative	Control Measure ID	Unit of Issue
Exercise Storyline	Control Measure Grid Coordinate	Class II
Conditions	Target Array	Clothing
Nature of Threat	Target Type	Nomenclature
Exercise Difficulty	Target Quantity	National Stock Number
Training Objective	Target Position	Unit of Issue
METL Tasks Supported	Target Initiation	Individual Equipment
Task Number	Exposure Time	Nomenclature
Task Title	Engagement Criteria	National Stock Number
Task Date	Rules of Engagement	Unit of Issue
Collective Tasks Trained	Administrative Training Rules	Tentage
Task Number	Army Aviation	Nomenclature
Task Title	Air Defense	National Stock Number
Task Condition	Civilians on Battlefield	Unit of Issue
Task Standard	Combat Electronic Warfare	Organizational Tool Sets and Kits
Task Date	Combat Service Support	Nomenclature
Exercise Diagram	Command & Control	National Stock Number
Exercise Development Notes	Direct Fire Engagements	Unit of Issue
Exercise Execution Notes	Dismounted Operations	Hand Tools
Tactical Materials	Fire Support	Nomenclature
Orders/Plans	Mobility & Survivability	National Stock Number
Orders/Plans	NBC	Unit of Issue
Transmission Methods	Prisoners of War Considerations	Maps
Overlays	TACAIR	DMA Stock Number
Overlays	Communication	Edition Number
Transmission Methods	Call Signs	Quantity
Tactical Reports	Communication Network Diagram	Administrative and Housekeeping
Reports	Simulation Workarounds	Nomenclature
Transmission Methods	Exercise Set-Up Materials	National Stock Number
Road to War	Training Area/Range (Live)	Unit of Issue
Geographical Location	Terrain Database (Virtual/Constructive)	Administrative and Housekeeping
Geographical Setting	Training Site/Range Preparation	Nomenclature
Political Factors	Exercise Date & Time Group	National Stock Number
Economic Factors		Unit of Issue
Social Factors		
Military Factors		
Infrastructure Factors		

(figure continues)

Figure 11. TSP components and elements.

Class III	Class VI	Commo Plan
Petroleum fuels	Nomenclature	Radio Nets
Nomenclature	National Stock Number	Radio Frequencies
National Stock Number	Unit of Issue	Simulation File(s) (Virtual/Constructive)
Unit of Issue	Class VII	Evaluation Plan
Lubricants	Nomenclature	Observation Plan
Nomenclature	LIN	Observation Role
National Stock Number	National Stock Number	Observation Duties
Unit of Issue	Unit of Issue	Observation Location
Hydraulic and insulating oils	Class VIII	Observation Schedule
Nomenclature	Nomenclature	Observation Focus
National Stock Number	National Stock Number	METL Tasks Supported
Unit of Issue	Unit of Issue	Collective Tasks Trained
Preservative	Class IX	Supporting Collective Tasks
Nomenclature	Nomenclature	Supporting Individual Tasks
National Stock Number	National Stock Number	Observation Tools
Unit of Issue	Unit of Issue	AAR Plan
Liquids and Gases	Class X	AAR Role
Nomenclature	Nomenclature	AAR Focus
National Stock Number	National Stock Number	AAR Technique
Unit of Issue	Unit of Issue	AAR Attendees
Bulk Chemical Products	MISC	AAR Schedule
Nomenclature	Nomenclature	AAR Locations
National Stock Number	National Stock Number	AAR Type
Unit of Issue	Unit of Issue	AAR Tools
Coolants	Starting Locations (Virtual/Constructive)	Administrative Materials
Nomenclature	BLUFOR	Planning Timeline
National Stock Number	OPFOR	Date
Unit of Issue	White	Event/Activity
Deicer and Antifreeze Compounds	Green	Who
Nomenclature	Starting Conditions (Virtual/Constructive)	Exercise Schedule
National Stock Number	Orientation	Date
Unit of Issue	Formation	Time
Additives of Petroleum	Spacing	Event/Activity
Nomenclature	Posture	Personnel Requirements
National Stock Number	Opening Range	Personnel Required
Unit of Issue	Fire Status	Observer/Controller
Chemical Products	Maintenance Status	Higher/Adjacent/Subordinate Units
Nomenclature	Equipment Status	OPFOR Units
National Stock Number	Personnel Status	Civilians/Government Agencies
Unit of Issue	Gunnery Competency	Administrative Support
Coal	Environmental Conditions	Personnel Qualifications
Nomenclature	Barometric Pressure	Military Occupation Specialty
National Stock Number	Cloud Ceiling	Rank
Unit of Issue	Density Altitude	Military Education/Experience
Class IV	Fog	Risk Assessment & Management
Nomenclature	General Visibility	Environmental Considerations
National Stock Number	Haze	Safety Considerations
Unit of Issue	Relative Humidity	References
Class V	Absolute Humidity	Document List
Nomenclature	Illumination	Key Word Index
DODIC	Precipitation	
National Stock Number	Surface Wind	
Unit of Issue	Temperature	

Figure 11 (continued). TSP components and elements.

The next review examined whether the components and elements fit all exercise types and environments, and whether they worked for all TSP users. The team produced charts showing which components were required by exercise type and environment and by TSP user. These were employed as the basis of a subject matter expert (SME) review using military and contractor personnel who have extensive experience in collective training including members of the Force XXI Systems Engineering and Technical Assistance Team at Fort Knox. For each exercise type and environment, SMEs walked through the list of components, judging the appropriateness of each component for that type of exercise. They then attempted to identify unlisted components that might be required in such an exercise. This review produced a limited number of revisions¹⁰ to the component list. More importantly, it confirmed the team's growing realization that the complete list provides all of the components and elements needed for TSPs for exercise types and environments that fall within the scope of the project. That is, there is sufficient commonality that the same master list of TSP components and elements will work for all exercise types and all environments. This is not to say that every component or element is required for every exercise type or environment; rather, there is enough commonality to justify using the same list for all. In the end, depending upon exercise type and environment, there may be some components or elements that are not required for a particular instance; however, in this case, there will simply be no data required for those fields. This should greatly simplify database development in support of the ATIA.

As a final validation of the TSP component and element list, the project team presented a briefing on the list to personnel from DCST (Training Development and Analysis Directorate), the Army Training Support Center, DCST-West (Collective Training Directorate), and U.S. Army Simulation, Training and Instrumentation Command. Because of the large amount and complexity of the information to be reviewed, the list of components and their descriptions were provided to reviewers one week in advance of face-to-face feedback sessions.

This review focused primarily on utilization, but also revealed the need to reexamine the comprehensiveness of the list. Reviewers wanted to know whether or not the list would support the development of Attack Aviation exercises, battle drills, and tank tactical tables. Following the review, the project SMEs conducted the required analyses and determined that the list, as designed, would support the construction of TSPs for the exercise types in question. In addition, minor editorial corrections to the list were made based on feedback received.

The TSP component and element list can serve as the basis for the specification and development of databases required to support TSP development within the ATIA. Using the components and elements identified, analysts can specify data types and relationships such that the resulting databases will serve the needs of TSP users involved in developing, assessing, and executing the collective exercises supported. Furthermore, the databases will serve as the basis for the applications that will be developed within the ATIA framework to support the various

¹⁰ In considering the live fire exercise, it was questioned whether the project team had considered the gunnery exercise as a type of training supported by TSPs for collective training. Gunnery had not been a focus. Thus, project SMEs reviewed the list for components that might be required for gunnery exercises, but that were not presently included in the list.

TSP users. The next section of the report addresses how those TSPs will be managed and assessed after they have been produced.

User-Produced TSP Management and Assessment

This section of the report addresses management and assessment of user-produced TSPs. It addresses these issues in the context of the Army's planned top-level training information architecture and examines, in detail, assessment of TSPs from the viewpoint of various users and uses. It also examines management issues related to access of TSPs, distribution of TSPs, TSP approval, and TSP maintenance.

Assessment of User-Produced TSPs

When a user produces a TSP, either by creating a new one or by modifying an existing one, several levels of assessment¹¹ may be needed as illustrated in Figure 12. The most basic, and probably most critical, occurs within the unit (and/or its parent organization) and involves assessing whether or not the exercise is likely to be effective and is of high quality. That is, personnel within the unit examine the exercise TSP to determine whether it fits the unit's training needs and is doctrinally and tactically sound. Specifically, the criteria for this assessment are: Does the exercise match the unit's training needs? Is the exercise tactically and doctrinally correct? Are the Mission Essential Task List (METL) tasks and supporting collective and individual tasks addressed adequately? Does the exercise utilize the training environment best suited to the unit's training needs? Are the resources adequate to conduct the training? Are safety and environmental issues addressed adequately? It would also be beneficial to assess the TSP in terms of adherence to structured training principles; however, this may be beyond the level of expertise of unit personnel at this time. As structured training techniques and principles are included in institutional training, unit members will increasingly be able to assess this also. Unit level assessment is illustrated by the bottom step in Figure 12.

Consistent with FM 25-100 doctrine that "leaders in the chain of command are responsible for the training and performance of their soldiers and units" (DA, 1988, p. 1-5), this level of assessment could be conducted by the unit commander (e.g., the platoon leader or company commander for platoon- or company-level exercises). However, to ensure that the training fits within the larger scope of higher echelon training requirements, the exercise should also be assessed at least one level up the chain of command (or two to be consistent with Army doctrine.) This is especially true if the unit commander is also the exercise developer. Platoon exercises would be assessed by the company commander, company exercises would be assessed by the battalion commander, and so on. Also, for exercises that are more complex (a battalion-level live fire exercise for example), it is likely that this assessment would be conducted by a team of unit personnel such as the battalion and brigade commanders and operations officers.

¹¹ When we talk about assessment of user-produced TSPs, we are talking about assessment from the standpoint of training content, training methodology, and the likelihood that the exercise will be successful. We are not talking about TSP components or format. We assume that there will be automated tools for developing exercise TSPs, probably as a component of SATS, that will ensure that the TSP has all required components and is properly formatted and packaged for distribution over electronic media.

Unit assessment results in a decision of whether the exercise is “ready to be run” or if it needs further work. Since user-produced TSPs, unlike those produced by proponents, are not likely to go through a developmental testing process, this assessment is extremely important.¹²

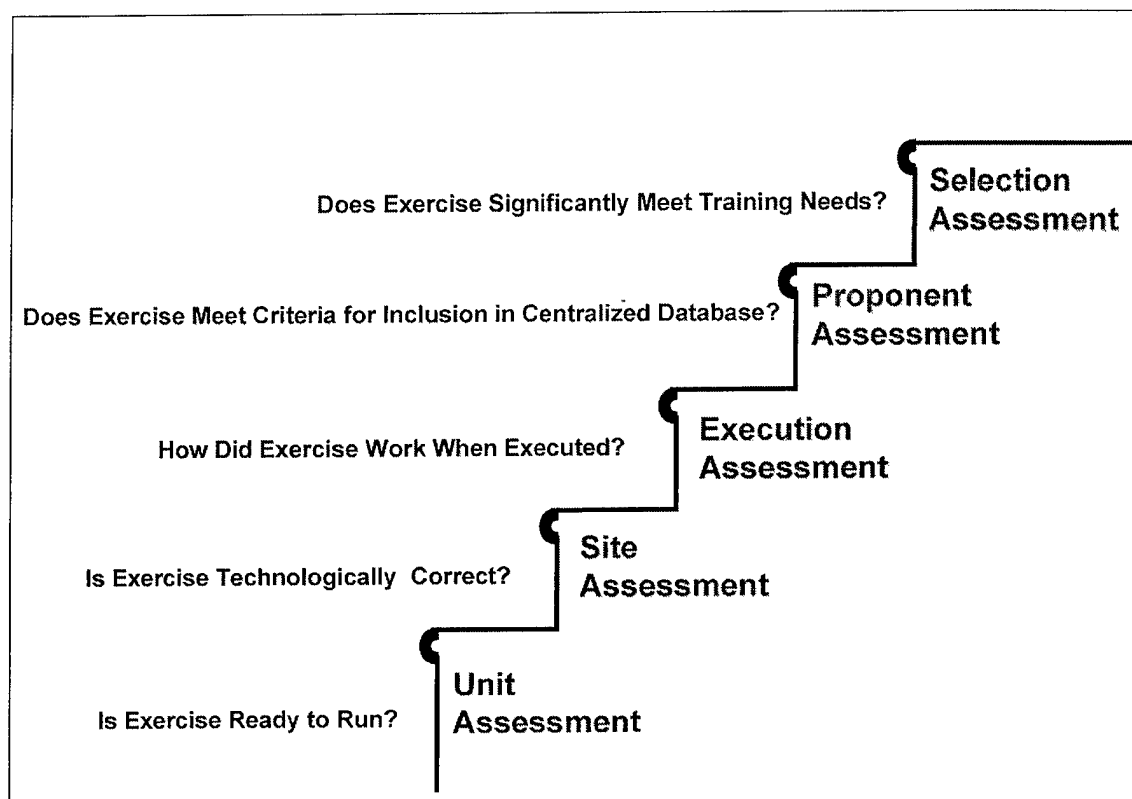


Figure 12. Training support package assessment levels.

The next type of assessment required involves examining or testing the exercise from a technical or logistic standpoint to ensure that it will run in the environment(s) for which it was developed. This is shown in Figure 12 in the step labeled Site Assessment. For example, after developing an exercise for the CCTT, the user would take it to the CCTT site; site personnel would assess it for any obvious problems, and, if possible, would “dry run” the exercise to ensure that it can be executed. (In the near future, desktop systems such as Modular Semi-Automated Forces and Both Forces will provide the user with the capability to complete this assessment without the need to involve site personnel.) The intent of this assessment is to discover execution problems related to the simulation/simulator or site prior to actually conducting the training in order to avoid wasting the unit’s training time and resources.

¹² Based on input from interviews the team conducted, we concluded that it is extremely unlikely that any collective exercise will be run more than once without some type of modification. Even from one time to another, the same unit will have slightly different training requirements necessitating at least minor changes to an exercise it executed previously. If the exercise is used by a different unit, it will at least require modifications to unit names and designations. This environment does not efficiently support a continuous formative evaluation process.

The next type of assessment, labeled Execution Assessment in Figure 12, examines how the exercise actually worked when executed. This is not to be confused with assessing the unit's performance during the exercise. Rather, this assessment looks at such things as whether the events in the exercise occurred as planned, whether the TSP had all the required information, and whether the cues provided were adequate to produce the desired unit actions. This activity is essentially doing formative evaluation of the exercise; however, since the exercise is likely to be executed "as is" only a single time by the developing unit, it is not likely that it will go through an iterative development process. Instead, the information obtained during exercise execution is added to the TSP in the "Exercise Execution Notes" field and made available to anyone who may consider the exercise in the future as a candidate for execution or modification.

The above three types of assessments are directed primarily to providing supporting data to the initiating unit's decision regarding whether the exercise is ready to be run. If the exercise stays within the unit or is never considered for execution again, no further assessment would be necessary. As soon as one begins to consider distributing exercises to other users, however, additional assessment is required.

Proponent Assessment, the fourth type as shown in Figure 12, occurs outside the initiating unit and will typically occur for exercises that are going to be made available to other units via a centralized database of exercises. This assessment is directed at determining whether the exercise is of sufficient quality and meets criteria for inclusion in the database. This assessment involves examining the exercise for doctrinal correctness and proper use of structured training techniques and adherence to structured training principles. It also addresses issues such as: Is this exercise substantially the same as one already in the database? Does the exercise include all necessary components? Is the exercise "packaged" properly for distribution via electronic media? The identification of all specific criteria that apply to this assessment requires further research and cannot be completed until decisions are made regarding technical issues related to exactly how exercises are going to be stored and shared, including how they are going to be maintained.

The final assessment type illustrated in Figure 12, Selection Assessment, is made by a unit commander considering whether or not to use an exercise obtained from another unit or from a centralized database. The assessment questions asked by the unit "adopting" the exercise would be very similar to those discussed above: Does the exercise match the unit's training needs? Are the METL tasks and supporting collective and individual tasks addressed adequately? Does the exercise utilize the training environment best suited to the unit's training needs? Are the resources adequate to conduct the training? Are safety and environmental issues addressed adequately? As stated previously, it is extremely unlikely that any exercise will be completely appropriate for execution by another unit; however, it may be usable with modifications. Therefore, a critical assessment issue at this point would be the commander's estimate of the amount of modification required to make the exercise acceptable for use. There are no hard-and-fast criteria for this decision; the answer will depend to a great extent on the previous experience of the commander in creating or modifying training exercises.

Taken together, these five types of assessments of the TSP may appear formidable. However, the first three are essentially what is being done currently by units or by proponents

who are assessing school- or contractor-produced exercises. The remaining two only come into play if the TSP is made a candidate for distribution.

Access to User-Produced TSPs

Central to the idea of user-produced TSPs is the notion that they will be made available to other units with similar training needs. This raises the question of how other units will be able to access them. For purposes of exploring this question, we assume that units developing TSPs will have local networks and that their network servers can be made accessible to other units. We also assume that there will be centrally located servers or repositories such as the General Dennis J. Reimer Training and Doctrine Digital Library (RDL) which are accessible by units. We can easily eliminate any access method involving a direct connection to a unit or central server. Direct access using current facilities available to units would be prohibitively slow and inefficient. In addition, there is the issue of how users would know where to look for a given TSP. Unless all TSPs were stored in a central repository, some methodology or procedure would need to be developed for informing potential users of all available TSPs and where to locate them. This is quite impractical. Similarly, we can eliminate use of a private network linking all users producing or searching for existing TSPs via Army or Department of Defense owned or leased facilities. This is certainly technologically possible; however, the cost would be prohibitive. This clearly points to using the Internet.

All of the technology necessary to access and share user-produced TSPs via the Internet currently exists and is readily available. Internet browsers (e.g., Internet Explorer and Netscape) are universally available, and development of a custom browser, if necessary, is not difficult. Locating TSPs can be accomplished with existing search engines (e.g., Yahoo, Infoseek). For ease of use, the browser and search engine could be incorporated into any user applications developed to create, modify, or otherwise use TSPs.

Of more concern is the issue of security. Individual units may be reluctant to give access to their servers to non-unit personnel unless a high level of security can be guaranteed, perhaps by requiring password access or by only allowing access to the TSP files and no others. Units may be more comfortable with having all accessible TSPs located on a central server such as the RDL. This would provide security since access can be controlled through passwords, but could quickly lead to storage problems on the RDL as more and more exercise TSPs are stored there. We also question the efficiency of using the RDL to store exercises that may be accessed only rarely. A third possibility is to establish a network of servers (at proponent schools, for example) that could be used for TSP storage and access. This does not eliminate the storage issue related to a central server; rather it mitigates it by spreading it out over several or many servers. A fourth alternative is to develop a virtual private network (VPN). A VPN uses encryption to provide secure connections over the Internet. It features built-in privacy and access control and allows only users belonging to the VPN to communicate freely across it. The VPN could provide a high level of security while satisfying the ATIA principle that data be logically centralized, but physically dispersed.

Each of these alternatives for accessing user-produced TSPs has positives and negatives. While the project team leans strongly toward an alternative that uses the Internet, further

research taking into account unit needs, Army-wide requirements, and how TSPs are distributed will be necessary to select among them.

Distribution of User-Produced TSPs

There are myriad ways TSPs could be distributed depending upon how one looks at questions of approval, access control, and maintenance. Three possibilities are illustrated in Figure 13. In the method labeled Centrally Distributed, all user-accessible TSPs would be stored on a single server accessible via the Internet. As will be explained in greater detail later, this method supports approval by a proponent along with centralized maintenance of the TSPs themselves. The Widely Distributed method provides for any TSP (that the developing unit wishes to make available) being accessible to any user, again via the Internet. This method requires no central approval and no ongoing maintenance. The third alternative, labeled Hybrid Method, combines features of the first two. In this method, some TSPs will be accessible from a central server; others will be accessible directly from the developing unit's server. The TSPs on the central server could be the core set identified by the process described earlier. In addition, if a developing unit or the proponent wished to nominate an exercise for inclusion on the central server, it could be added after undergoing a proponent assessment and approval process. The TSPs accessible directly from unit servers would continue to require no external approval or maintenance. Individuals interviewed were evenly split between the Centrally and Widely Distributed alternatives with the primary difference lying in how they viewed the TSP approval process. Before examining the differences, however, a brief discussion of common issues related to TSP distribution is in order.

Any exercise TSP consists of a large amount of data or information as evidenced in the previous discussion of TSP components. Many of these components appear in multiple locations in a TSP. In addition, the organization and presentation of these components depends largely upon who is using that information. These factors suggest that TSPs are best treated as records or files and that database applications be used to access them. This eliminates the need for any user to enter the same data into more than one location in the TSP, as he or she would need to do if the TSP was stored and maintained as a word processing file. It also allows the information in the TSP to be formatted and presented to best fit the needs of a particular TSP user by providing a "tool" or application program designed specifically for that user. As discussed later, the project team has identified six unique users each of whom will use different components of the TSP and for whom these components might be presented in different formats. The question becomes how best to make TSPs that are stored as database records or files sharable among users.

If all TSPs are stored in a central repository (the Centrally Distributed Method), they can simply be stored as records in a single database. Users would access individual TSPs by accessing the database remotely, viewing the available records and selecting the specific record they wish to access. That record could be transferred to the user's local machine by "packaging" the record as a unique database file and downloading it, all of which would be transparent to the user. The user's application would treat the file as the "back end" database to the front end application he or she was using.

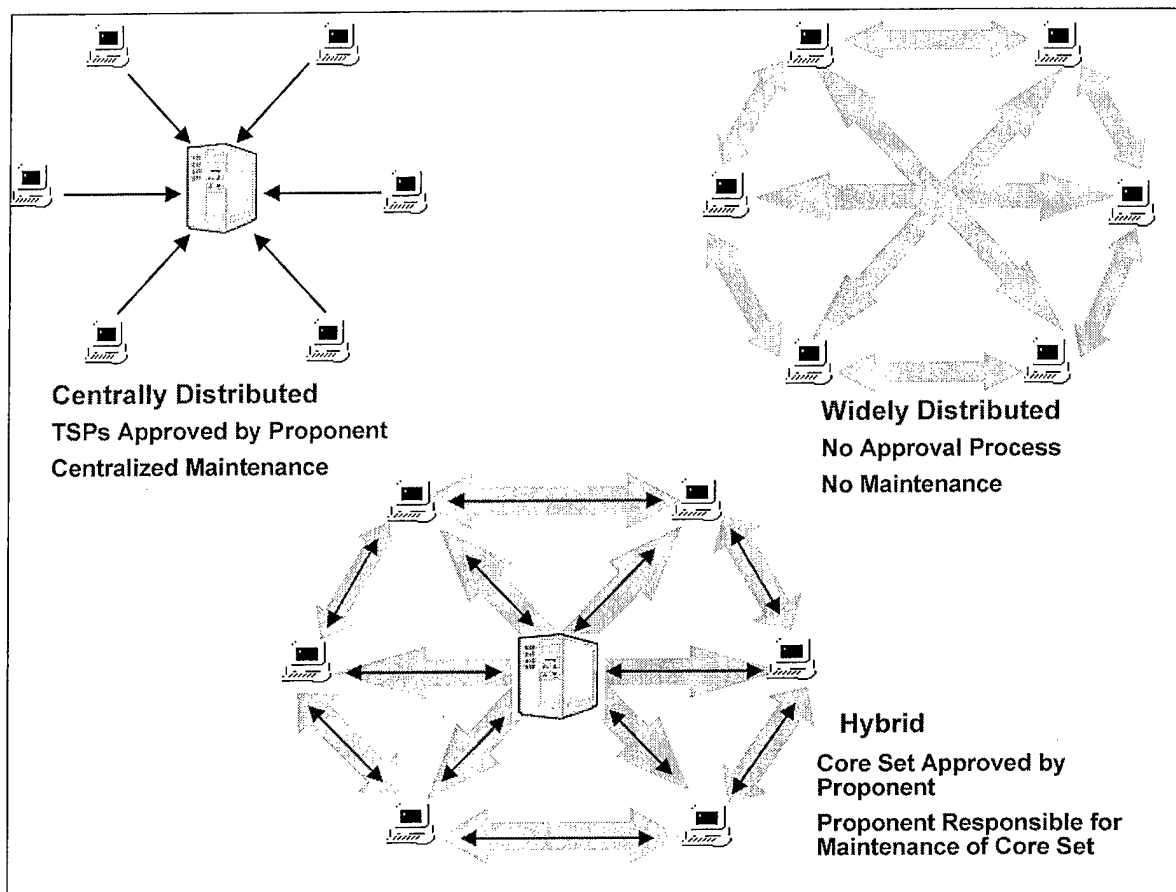


Figure 13. Training support package distribution methods.

If all TSPs are stored in a central repository (the Centrally Distributed Method), they can simply be stored as records in a single database. Users would access individual TSPs by accessing the database remotely, viewing the available records and selecting the specific record they wish to access. That record could be transferred to the user's local machine by "packaging" the record as a unique database file and downloading it, all of which would be transparent to the user. The user's application would treat the file as the "back end" database to the front end application he or she was using.

If, on the other hand, TSPs are stored on and accessed from any unit's server (assuming the unit chooses to make it available), the situation is somewhat different. The TSP still needs to be a database file; however, it must be searchable using either an existing or custom-made search engine. This would require each TSP to be packaged and stored as a separate file, and to have that file embedded in or linked to an Internet browser-readable file (Hypertext Markup Language [HTML], for example). These alternatives are depicted in Figure 14. In the Centrally Distributed method, users search only the TSP database using an application which displays a "thumbnail" description of each exercise matching their search criteria. When they find the

exercise they want, they download it to their local machines.¹³ In the Widely Distributed method, users search the Internet (or a VPN on the Internet) for files that match their search criteria. From the list of “links” the search produces, they select those they wish to examine in more depth and see a “thumbnail” of the exercise. When they find the one they want, they link to the actual exercise database file for download to their local machine.

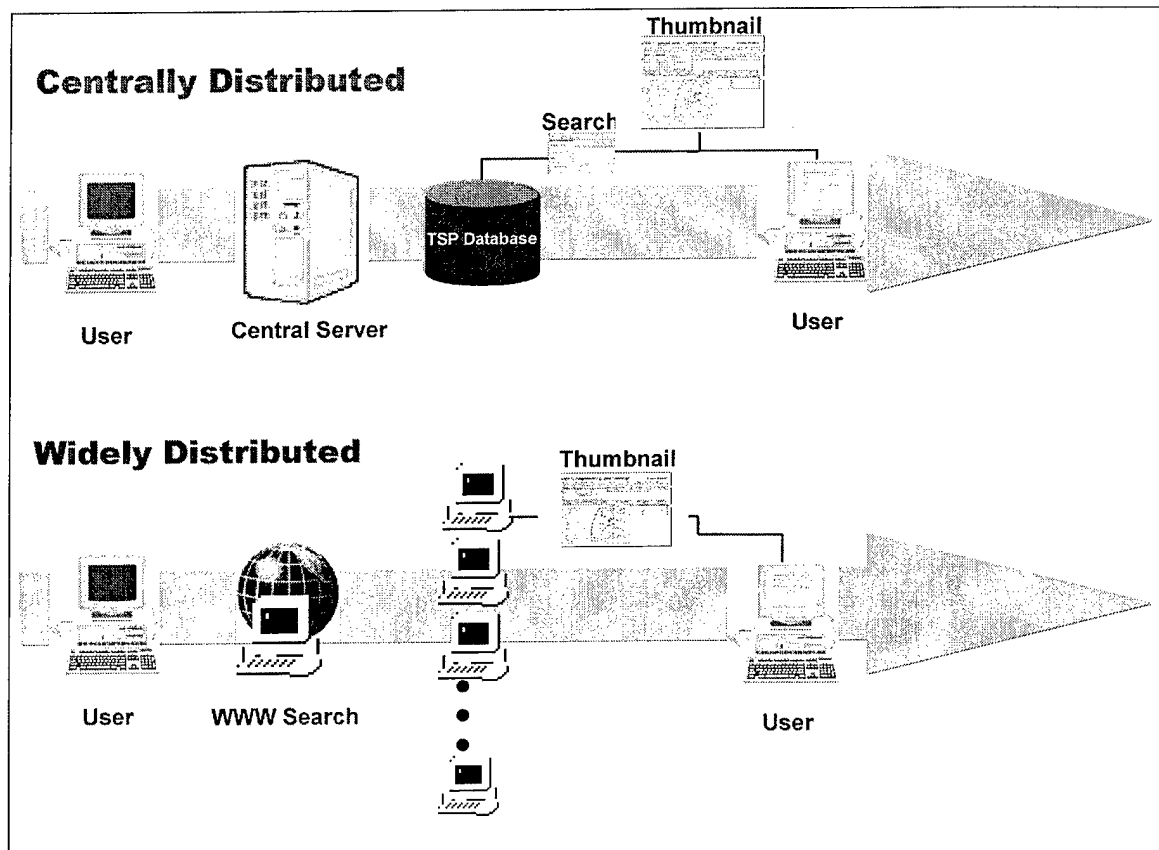


Figure 14. Training support package access and retrieval processes for Centrally and Widely Distributed methods.

To support the Centrally Distributed method, little additional information or data will be needed in the TSP itself. The user links to the remote server using a database application that can access the remote database file directly, allowing the user to determine whether he or she wishes to download the exercise or not.¹⁴ To support the Widely Distributed method, on the

¹³ In the future, technology will allow the user to work with a file on the remote server just as if it were on his local machine. However, we do not envision this being the case in the next five years, so we continue to propose downloading of the TSP file to the user's local machine.

¹⁴ While the technology to do this efficiently may not be readily available today, we anticipate that it will be within the five-year scope of this project. At present the application to access and download the TSP would most likely reside on the remote server.

The distribution methods described conform to ATIA principles: They separate the data from the applications used to access them, any metafiles created are user-oriented, and data are logically centralized while physically distributed. As with access issues, further study will be needed to make final decisions regarding distribution methods; however, at this time, the project team strongly advocates use of the Hybrid method. It utilizes the best features of both the Centrally and Widely Distributed methods: It makes TSPs that are part of a core set easy to locate and access while not overburdening the central server housing these TSPs, and it allows access to every TSP that has been made available regardless of how obscure it may be.

User-Produced TSP Approval

Based on the responses of the personnel interviewed, TSP approval is likely to be a contentious issue. At one end of the spectrum, there were those who felt strongly that no TSP should be made available that had not gone through a proponent assessment and been approved for distribution. The major concern was that poor quality exercises would proliferate and collective training would eventually be severely degraded. On the other end of the spectrum were those who thought that all TSPs should be made available to any user, and that the user is in the best position to assess the TSP and determine whether or not it fits his or her needs.

The project team agrees that the unit commander is the final authority on the training needs of his or her unit. However, he or she is probably not the most qualified person for judging the appropriateness or quality of a TSP for use outside his or her unit. At this time and for the foreseeable future, there is a need for proponent approval, at least for those exercises that are stored in a central repository. The TSP users will have a tendency to view exercises that are stored in a central repository as having been "blessed;" therefore, positive steps need to be taken to ensure they are of highest quality. In addition, any exercises added to the central repository will need to go through the same proponent approval process. Users will perceive them as exemplars. Those TSPs which are not placed in a central repository, on the other hand, do not need to undergo proponent approval. The unit commander who considers the TSP for possible execution or modification is quite capable of determining whether the exercise is doctrinally sound and if it serves his training needs.

User-Produced TSP Maintenance

Maintenance of user-produced TSPs basically involves making sure that they are kept current. Do they conform to current MTPs and other Army manuals, and are they still compatible with the TADSS needed to execute them? However, before considering how this would be accomplished, we need to look at whether it should be accomplished. The answer, as with TSP approval, depends on how the TSP is distributed. The TSPs stored in a central repository are likely to be considered differently by users from those they find on unit servers. First, users will associate the centrally stored TSPs with the proponent, and it is reasonable to assume that they will think of them as approved and current. On the other hand, they are likely to consider TSPs found on a unit server as ones that were developed for a particular training need, were run once, and have not been looked at since, thus requiring closer scrutiny. Based on this approach, we conclude that the centrally stored TSPs will require ongoing maintenance; the others will not.

Maintenance of centrally stored TSPs is likely to involve substantial effort. Whenever manuals change, or there is a change in the TADSS, each exercise that uses that manual or TADSS will need to be examined to determine the impact of the changes. Based on this examination, the exercise may need to be revised. It is possible some revisions could be automated; however, this will likely work only with the simplest of revisions. The burden of TSP maintenance will probably rest with the proponents and it must be recognized that substantial effort will be involved.

Maintenance of TSPs kept on the unit servers would neither be required nor cost-effective. First of all, there is the question of who would do it. With everything else that demands commanders' attention, it is very unlikely that they are going to be concerned with exercises developed or executed in the past. This is particularly true if they are never likely to run that exercise again. What is realistic to expect is that "maintenance" will occur whenever another unit selects that exercise for its own use. That is, one of the considerations unit commanders will make when they select an exercise is whether it uses current Field Manuals (FMs), MTPs, and TADSS. In fact, it would be even more efficient if the user tool or application they are using could transparently compare the MTP tasks and TADSS to the current versions and report any discrepancies to them. This would allow them to make a better informed decision to use the exercise or not. In any case, making the TSP conform to the latest manuals will be necessary only if the commander decides to use the exercise.

User Tools

A user tool or tool set needs to provide the functionality required to produce, administer, execute, and assess collective training exercises and their supporting TSPs. Given that a TSP is most efficiently treated as a database, any user tool developed should be a database application which provides access to the database of TSPs regardless of how they are distributed. The tool or tools should also provide built-in guidance and performance aids and access to other databases, such as those on the RDL, that may be needed to accomplish these functions.

There are a number of issues or variables to consider when attempting to identify potential tools for the various TSP users. First is the identification of the users themselves and the role each will play in exercise development and execution. Another issue concerns whether it would be more efficient to have one tool that serves the needs of all users or separate tools tailored to individual user needs. A related issue concerns whether the same tool or tools will work for exercises developed for various exercise types and various training environments.

Additionally, the identification of user tools needs to consider the larger context of the ATIA since any tools identified and developed would become components of it. More specifically, we need to attend to the ATIA principles and guidelines that the application tools are segregated from the data they use, that the data are logically centralized but physically dispersed, and that there will be one-time data entry to update all related system databases. Any tool developed needs to satisfy these requirements.

TSP Users and Application Requirements

The project team examined the various roles that occur in the development and execution of collective exercises in the live, virtual, and constructive environments and identified six user groups: TSP developers; exercise O/Cs; exercise support personnel including opposing forces (OPFOR); site staff; unit administrative support personnel; and the training unit itself. Each of these groups has unique needs for the various TSP components discussed earlier, and each has different roles to play in the development and execution of collective exercises. They all need access to the same database of TSPs regardless of whether they are using separate tools or different components of one large master tool. The individual tools or components of a master tool should be structured so that only the information required by the user is made available to him or her, and for those users who need only review the TSP content, their access should be limited to read-only. The users and their roles are:

1. Exercise developer – develops the exercise, either by creating a new one or by modifying an existing one. This individual, or in some cases group of individuals, will initially provide the vast majority of data for the TSP. The developer tool or function needs to be structured around a sound training development process for the exercise type and environment selected and needs to have access to all components and elements of the TSP.
2. Exercise O/Cs – responsible for observing performance of the training unit; facilitating exercise after action reviews (AARs); coordinating the events that occur in the exercise; participating in exercise planning and preparation; and producing take home packages if appropriate. The O/C tool or function needs to allow access to all of the developer-produced information for review purposes. It also needs to allow the O/C to add new data or modify existing data for exercise scheduling, as well as for creating observation materials, AAR materials, and take home packages.
3. Exercise support personnel – participate in exercise execution by supporting the activities of the training unit or by playing the role of the OPFOR. Support personnel may be military personnel from the training or other unit or site or training area staff. Individuals participating in the exercise in support capacities need to be able to review the TSP information required to perform their role; they will not need to modify or create any new information. The exercise support position tool needs to allow access to the information each individual needs to complete his activities in the exercise, which suggests that the tool or function will be able to filter the TSP based on the particular support role being played. As training environments and TADSS evolve to use the same workstation to play multiple support roles, at least in virtual and constructive environments, the exercise support position tool may need to change also.
4. Site staff – the personnel at the training site or training area who are responsible for coordinating and scheduling training, ensuring that the exercise can be executed at the site or area, and providing the persons and equipment necessary to execute the exercise. The site staff tool or function needs to allow access to the TSP information needed to support exercise execution. It could also provide appropriate scheduling and reporting support, although those would not become part of the TSP. Finally, it would provide

input access to the Exercise Execution Notes component of the TSP for entry of information that would assist unit and site personnel in executing the exercise in the future.

5. Unit administrative support personnel – individuals from the training unit or a higher echelon unit who are responsible for completing the scheduling and coordination necessary to run the training exercise. These individuals will most likely come from the operations section of the unit and will coordinate with the training unit, the personnel who will observe/control the exercise, the exercise support personnel, the site administrative and support personnel, and anyone else required to successfully run the exercise. The administrative support tool or function needs to allow access to all of the TSP information since all of it may impact exercise coordination. It might also include scheduling and coordination support tools, although that information would not become part of the TSP.
6. Training unit – the personnel being trained through execution of the exercise. The training unit needs access to the components of the TSP necessary to provide background, motive, and enough information to conduct preliminary training and rehearsal for the actions they will take during exercise execution. In the case of live training, the unit needs access to sufficient information to conduct pre-combat inspections, move to the training area, and plan for exercise logistic support. For example, depending on the specific exercise being executed, they might need access to training tasks and objectives, the Road to War information, operations orders (OPORDs), maps and overlays.

An Example User Application

To illustrate further the nature of the user tools being considered, the project team developed screen shots that represent how one specific tool or function might operate.¹⁶ The tool selected was the O/C tool, the functionality of which is illustrated in Figure 16. The O/C tool allows users who will be observing/controlling an exercise to locate the appropriate exercise TSP either from a central repository or from a widely distributed source. Once located, they can then review all of the information needed to complete the exercise O/C activities including the exercise materials themselves and the previous training history of the unit. They can complete any necessary scheduling activities including coordination with other personnel who will observe/control the exercise and any pre-execution meetings. They can produce observation materials to be used during exercise execution as well as materials for conducting AARs. Finally, they can produce take-home packages, if appropriate. Integral to the application would be “help” and other information to assist the user in completing the O/C tasks or in using the application itself. A relatively complete set of screen shots for the O/C application is available from ARI at Fort Knox. Similar applications could be developed for the other users identified.

¹⁶ We should point out that one tool, CITT, has already been developed for exercises conducted using CCTT. That tool currently includes some degree of functionality for each of the user groups.

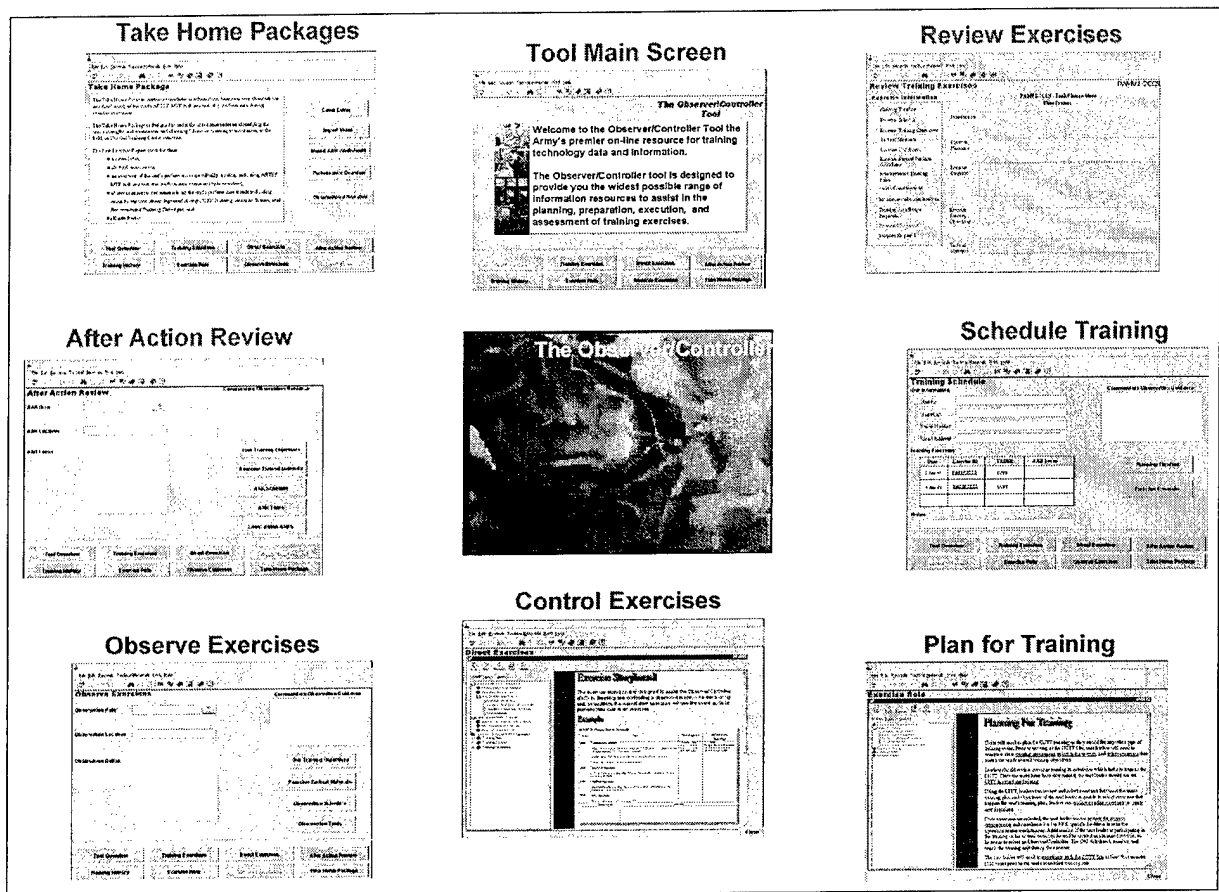


Figure 16. Example functionality for the observer/controller application.

Additional User Application Issues

Applications Segregated from Databases. The ATIA specifies that applications developed within it be segregated from the database(s) which support them. By linking the application to the database rather than embedding the database in the application, a number of benefits are achieved. First, multiple applications can link to the same database with each application being designed around only those functions which are integral to it. So, for example, an application for exercise support personnel will link to the TSP database (whether centrally or widely distributed) and will provide users with access to those elements of the TSP needed to complete their role in the exercise. Similarly, the training unit will be able to access the TSP but only to review or obtain the elements needed to set up their training – OPODs and overlays, for example. All other information, such as where the OPFOR will appear and how they will fight, would be unavailable to them. In fact, for these users, access to the TSP could be “read only” since they need only obtain information and have no reason for modifying the TSP. More detailed research will be required to determine precisely what functions each user application will include and how access to the TSP will be provided.

On the other hand, for those users who do have a legitimate reason for modifying the TSP, segregating the application from the database supports the principle that there be one-time data entry for all uses and all users of the TSP. If training site personnel need to modify the exercise TSP to ensure that it actually works at the site, for example, any changes they make will flow to all users of the TSP. Also, if the modification appears in multiple locations in the TSP for any user, it will need to be entered only once.

Implied in this discussion is the requirement that a mechanism be developed for ensuring that a single version of the TSP be maintained. This is relatively simple if the TSPs are contained in a centrally maintained database – it is a matter of controlling “write” access privileges. For widely distributed access, on the other hand, the situation is considerably more complicated. If a TSP is obtained from a unit server by a user who has legitimate reason to add to or modify it, that user needs a way to update the TSP on the unit’s server. Procedures for providing this type of access will need to be developed. If the user only modifies the TSP on his or her local computer, it will not migrate to the version on the unit’s server, and, very quickly, multiple versions of the same TSP will exist making the whole process of exercise development and execution extremely difficult. In the future, this difficulty will be mitigated to some extent by the likelihood that technology for remotely accessing and modifying files will develop to the point that it will be eminently possible for a user in one location to modify a TSP stored on a computer in another location as easily as if it were on his local machine.

Different Applications for Different Environments. An issue that was not addressed by the current project concerns whether or not the same user application will work effectively for training in live, virtual, constructive, or combined environments. Will the same basic TSP development tool work equally well for developing an exercise for CCTT as for Warfighter Simulation? Similarly, will the same tool work equally well for developing a relatively constrained exercise such as one for CCTT versus a much larger exercise such as that used in a Synthetic Theater of War environment? The critical question is not one of size of the exercise as much as complexity. Will the same tool serve the needs of all exercise development or will variations be needed? Further research is needed to address these questions.

Multiple Applications. Finally, there is the question of whether there is a single integrated application that includes the functionality required for all users, or whether it is more efficient to develop multiple applications. We favor the latter alternative. First, it greatly simplifies the individual applications if they need serve only one type of user. And, since each application is linking to the same database, there is no problem with different applications using different data. In addition, it allows for the possibility that different applications fit within different functions of the ATIA. It is fairly clear, for example, that the TSP development application fits within the Unit Training Management System or SATS component of ATIA. It is less clear where other user applications best fit.

Summary and Conclusions

This report has presented the results of a research project to examine issues related to assessing and managing user-produced TSPs, where “user-produced” refers to TSPs that are developed by unit commanders and other unit trainers as well as institutional trainers who will be directly involved with executing the exercises they produce. In addition, the SOW (ARI, 1999) focused the research on combat arms organizations at brigade and below and directed the project team to address collective training in live, virtual, constructive, and combined environments at present and for the next five years.

The major research activities consisted of: data collection from a wide variety of sources including existing reports and other documentation, Internet sites, and knowledgeable individuals; data analysis completed individually and as a group; and development of products to fulfill the project objectives based on the analyses of the data collected. A major focus of data collection was coordinating with the ongoing development of the ATIA which will establish a framework within which the products of the current project fit. In achieving the project objectives, several outcomes or products were produced.

We developed a process for identifying core set exercises for combat arms units. This five-step process involves identification of the unit for which the core set is being specified, determining viable training methods in terms of exercise types and training environments for the unit, specifying the content of the core set in terms of the collective tasks upon which it focuses, and identifying the specific exercises that comprise the core set. Using this process, proponents will be able to identify the exercises that could be included in a library or repository of exercises that would serve the majority of the collective training needs for a unit.

We identified the components and elements of a TSP for collective training exercises to a level sufficient to develop database specifications for them. Although we did not develop database specifications, the work completed here will greatly facilitate such development which is an important step in the further development of the ATIA. As part of this activity, we also came to the conclusion that the same TSP components and elements can serve all collective training exercises for live, virtual, and constructive environments.

We examined how user-produced TSPs should be assessed and identified five levels of assessment that may be required depending upon how the TSP is distributed. We also examined management issues including how users will access TSPs, how TSPs might be distributed, and the approval and maintenance processes for distributed TSPs.

Finally, consistent with the user configurations identified in the ATIA, we identified six types of users for TSPs including developers, exercise support personnel, O/Cs, site personnel, unit administrative support personnel, and the unit itself. We examined the requirements each of these user types will have for the information contained in the TSP and considered the type of user tool or application that would serve these needs. We also examined one such tool – that for the O/C – in some detail and produced prototype screens showing how it would function.

Based upon the research completed, the project team came to the following conclusions:

1. It is possible to specify a systematic process for identifying the exercises that would comprise a core set of exercises for a given combat arms unit. This process can be used by various proponents to determine the exercises that would comprise a repository of exercises that would serve many of the collective training needs of units. As users develop more exercises themselves, it will become increasingly important to have core sets available that provide exemplary exercises for use as is or that can be modified to serve the user's specific training needs.
2. The same set of TSP components and elements, and thus the same TSP database structure, can be used for all collective training exercises for combat arms units at brigade and below in live, virtual, constructive, and combined environments. The vast majority of components and elements are common to all exercises, and the small subset that are not can be handled easily by the user tools that will be developed to produce and present exercise TSPs. Individuals currently developing databases to support collective exercise TSPs within the ATIA can use the component and element list produced in this project as a starting point for their efforts.
3. There are several ways that user-produced TSPs could be distributed to other potential users; however, the hybrid method that combines both the central distribution of core set TSPs and distribution from unit servers of all others appears to offer the greatest utility. This method makes the greatest number of TSPs available to the greatest number of users. Further research into the infrastructure required to support hybrid distribution is needed to determine the feasibility of using existing technology, such as the Internet, as well as the physical facilities currently available at typical Army installations.
4. A TSP assessment methodology is critical to the whole concept of sharing TSPs among units since it provides some level of assurance that quality standards have been met. The present project proposes multiple types or levels of assessment of user-produced TSPs depending upon the purpose of the assessment and how TSPs will be distributed. All user-produced TSPs require assessment within the developing unit, however, only those distributed from a centralized repository require proponent assessment and approval. The TSPs distributed from unit servers will be assessed by the units considering them for their own use.
5. There are multiple users of TSPs each of whom has different needs and requirements. These users will be best served by having a tool available that specifically addresses their needs. These tools should be database applications and may be stand-alone or may be a "plug in" to one of the functions specified in the ATIA. All tools would access the same database(s) of TSP components and elements.

This project has examined issues related to user-produced TSPs in depth. In so doing, we have concluded that, although not specifically addressed in the ATIA, user-produced TSPs and the ATIA are fully compatible. Future efforts to develop ATIA and corresponding training information systems can build upon the work completed here to make full use of the unit-based training resources that exist throughout the Army.

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Appendix A

Acronym List

AAR	after action review
AFRU	Armored Forces Research Unit
AirNet	Air NETwork
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
ATIA	Army Training Information Architecture
ATR	Administrative Training Rules
CATS	Combined Arms Training Strategy
CCTT	Close Combat Tactical Trainer
CFX	command field exercise
CITT	Commanders' Integrated Training Tool
COR	contracting officer's representative
CPX	command post exercise
DA	Department of the Army
DCSPER	Deputy Chief of Staff for Personnel
DCST	Deputy Chief of Staff for Training
FCX	fire control exercise
FM	Field Manual
FTX	field training exercise
HTML	Hypertext Markup Language
HumRRO	Human Resources Research Organization
LCX	Logistical Coordination Exercise
LFX	live fire exercise
MAPEX	Map Exercise
METL	Mission Essential Task List
MFR	Memorandum for Record
MTP	Mission Training Plan
NBC	nuclear, biological, and chemical
NCO	Non-commissioned Officer
O/C	observer/controller
OPFOR	opposing forces
OPORD	operations order
RDL	General Dennis J. Reimer Training and Doctrine Digital Library

SAT	Systems Approach to Training
SATS	Standard Army Training System
SIMNET	Simulation Networking
SME	subject matter expert
SOW	statement of work
STX	Situational Training Exercise
TADSS	training aids, devices, simulators, and simulations
TC	Training Circular
TD	training development
TDA	table of distribution and allowances
TEWT	Tactical Exercise Without Troops
TOE	table of organization and equipment
TR	TRADOC Regulation
TRADOC	U.S. Army Training and Doctrine Command
TRADOC ODCST	TRADOC Office of the Deputy Chief of Staff for Training
TSP	training support package
VPN	virtual private network

Appendix B

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Appendix C

TSP Components from TR 350-70

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- Direct Fire Engagement
- AD and TACAIR/CEW
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- Risk Mitigation Worksheet
- Risk Leader Approval
- Army Aviation/Casualty Assessment

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- Maps and Overlays

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Appendix D

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Appendix E

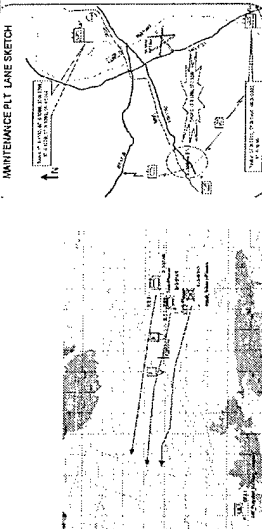
Collective Exercise TSP Component and Element List

Collective Exercise Training Support Package Component & Element List

Component/Element Name	Descriptions	Examples
TSP Identification		
<i>Exercise Identifier</i>		
Exercise Title	The name the developer assigns to the exercise.	Aerial Gunnery A CCTT Exercise - Warrior Focus Janus Staff Peacemakers Prepare For Defense
Echelon(s)	The echelon(s) the exercise is designed to train.	Brigade, Battalion, Company/Team, Platoon
Unit Type	The type of unit the exercise is designed to train.	Armor, Mechanized Infantry, Scout
Unit Designation	The unit the exercise is designed to train.	A CO, 2-34 AR 1 Bde, 2 ID(M)
Mission Type	The mission the exercise supports.	Movement to Contact Defense Deliberate Attack Stability Operations Support Operations
Exercise Type	The type of exercise as defined in Appendix C, FM 25-101 and/or gunnery tables.	LFX CPX STX Decision Making Exercise
TADSS	The training aids, devices, simulators, and simulations needed to support the exercise.	CCTT MILES AVCATT BBS Janus OneSAF
Exercise Proponent	The proponent for the exercise.	Armor School Infantry School

Component/Element Name	Descriptions	Examples
<i>TSP Developer/POC Information</i>		
Developer/POC Name(s)	The name(s) of the TSP developer/POC(s).	Major John Smith
Developer/POC Unit Identification Code and/or Organization(s)	The alphanumeric code that uniquely identifies the TSP developer's/POC's unit.	WA9LAAA HQ 7 TH Engineer Bde
Developer/POC Phone Number(s)	The DSN and/or commercial telephone number of the TSP developer/POC.	555-555-5555
<i>TSP Development Status</i>		
Status	The state of development for a given TSP.	Initial Draft Training Draft Final Draft
Date	The TSP development status date.	22 June 1996
<i>Exercise Overview</i>		
<i>Exercise Narrative</i>	A brief description of the exercise's tactical storyline (including the unit's mission or actions) and a general statement of the storyline conditions that are key to supporting the training objectives.	
Exercise Storyline	A general overview of the events leading up to the exercise and the expected actions that will occur during the exercise.	Following a tactical road march from AA TANK to the LD, platoon maneuvers as the left flank platoon of the lead team in a TF movement to contact. Team Alpha moves along AXIS WEASEL to defeat forces in zone and secure OBJ CHEVY. O/O, the team occupies BP 3 orienting from TRP 02 to TRP 04.
Conditions	A general description of the environmental conditions and/or starting status as it impacts training.	The exercise begins at 170445JAN00 requiring the unit to perform the tasks during limited visibility.

Component/Element Name	Descriptions	Examples
Nature of Threat	The OPFOR organization, equipment, and tactics employed in the exercise as defined in FM 100-61 and FM 100-63.	The enemy in the exercise consists of a BMP-II equipped MIBn deployed with two CRPs, an FSE, and an advance guard. The MIBn is reinforced with a tank company and a SP howitzer battalion (-).
Exercise Difficulty	A developer-provided estimate of the general difficulty of the exercise relative to unit's current capabilities.	Easy Medium Difficult
<i>Training Objective</i>	A statement that describes the desired participant outcomes in terms of the tasks, conditions, and standards for the specified exercise.	
METL Tasks Supported	The METL tasks supported by the exercise.	Mobilize and Deploy Defend
Task Number	The alphanumeric identification assigned by the proponent.	71-6-9263.17.00KB
Task Title	The name of the task assigned by the proponent.	Defend
Task Date	The date the task was published and approved by the proponent.	
Collective Tasks Trained	The tasks trained in the exercise, drawn from the appropriate Mission Training Plan, that supports the METL tasks trained.	17-3-1016 Conduct Tactical Movement 17-3-0221 Execute Actions on Contact 17-3-0219 Conduct an Attack by Fire
Task Number	The alphanumeric identification assigned by the proponent.	17-3-0221
Task Title	The name of the task assigned by the proponent.	Execute Actions on Contact

Component/Element Name	Descriptions	Examples
Task Condition	The field conditions under which the task will be performed. This may include the when, where, and why the unit performs the task and what materials, personnel, and equipment the unit must have to perform the task.	The platoon is conducting tactical operations as part of a company team or cavalry troop. It makes enemy contact by receipt of direct/indirect fires, by direct observation of enemy forces or obstacles, or from reports sent to or coming from higher headquarters.
Task Standard	A statement that establishes the criteria for how well a task must be performed.	The platoon reacts to the contact, deploys as required, and reports the contact to the commander. It develops the situation based on the commander's intent while retaining sufficient combat power to continue the mission. The platoon successfully accomplishes the course of action directed by the commander.
Task Date	The date the task was published and approved by the proponent.	
Exercise Diagram	A graphic depiction of the exercise.	
Exercise Development Notes	Information provided by the developer to clarify the exercise design and development decisions. This should include modifications of doctrinal tasks, conditions, and standards.	"This exercise focuses on movement techniques, formations, and command and control procedures; thus, no enemy contact was included."
Exercise Execution Notes	Information learned from exercise execution.	"When we ran the exercise, all the OPFOR was on one workstation; it would have been easier to control the OPFOR if we had used two workstations."

Component/Element Name	Descriptions	Examples
Tactical Materials		
<i>Orders/Plans</i>	A directive issued for the purpose of effecting the coordinated execution of an operation as defined in Appendix H, FM 101-5-1. It may contain a description of the task organization, situation, mission, execution guidance, administrative and logistics support, and command and signal information for the specified operation.	
Orders/Plans	The specific order/plan needed to support the exercise.	OPORDs Courier FRAGOS WARNOs OPLANs
Transmission Methods	The means, electronic or otherwise, by which a HQ sends an order/plan to its subordinates.	MCS FBCB2
Overlays		
	A printing or drawing scaled to a map to show graphics for combat, combat support, and combat service support operations as defined in Appendix H, FM 101-5-1.	
Overlays	The specific overlay needed to support the exercise.	Operation Overlay Fire Support Overlay Engineer Overlay
Transmission Methods	The means, electronic or otherwise, by which a HQ sends an overlay to its subordinates.	MCS CSSCS ASAS FAAD3I FBCB2 TACFAX AFATDS Courier

Component/Element Name	Descriptions	Examples
<i>Tactical Reports</i>	Oral and/or written communication delivered in an appropriate military format as defined in Appendix H, FM 71-3.	
Reports	The specific tactical report needed to support the exercise.	INTSUM SITREP SPOTREP
Transmission Methods	The means, electronic or otherwise, by which a HQ sends a report to its subordinates.	MCS ASAS FBCB2 AFATDS CSSCS FAAD3I Radio TACFAX Courier
<i>Road to War</i>	A graphic and/or narrative description of the events leading up to the situation at the start of the exercise.	
Geographical Location	The area in which the events of an exercise take place.	The area adjacent to the boundary between Kentucky and Indiana.
Geographical Setting	The surroundings or environment in which the exercise takes place.	This area has been hotly disputed since 1992. In 1993, the UN established a multi-national peacekeeping force to patrol the area. Constant violence along the border has been escalating until March of 2000. Elements of the People's Democratic Republic of Kentucky sent forces across the Ohio Canal, prompting the deployment of US forces to assist in re-establishing peace in the region.
Political Factors	Issues and considerations related to the government of the area.	Since the mid-1930's Kentucky has been ruled as a Marxist-inclined political party. It tolerates little or no dissent. Indiana has been ruled during the same time by a series of center-left coalitions. A broader range of political debate is tolerated in Indiana than in Kentucky.

Component/Element Name	Descriptions	Examples
Economic Factors	Financial considerations of the area.	Kentucky's economic power is based on agriculture commodities and is subject to significant price fluctuations based on the international market. Indiana's economy is based on a mix of manufacturing, small business, and agriculture. Indiana is a net exporter. Kentucky has relied on a series of large loans from IMF to finance its military hardware purchases.
Social Factors	Cultural characteristics of the location.	Although nominally egalitarian, Kentucky is divided into two very different social classes. Social power and prestige are actually vested in the ruling party's hierarchy. Indiana was originally ruled by a land-owning minority; however, over the last thirty years it has developed a middle class which now includes approximately 1/3 of Indiana's population.
Military Factors	Characteristics of the armed forces in the area.	Kentucky's armed forces consist of 500,000 personnel in uniform. Eighty percent of those people are members of Kentucky's ground component which consists of a mix of modernized infantry and armored forces. Kentucky's air power is a mix of helicopters and fixed wing aircraft with a close air support mission. Indiana's armed forces are similar to Kentucky's but only half the size.

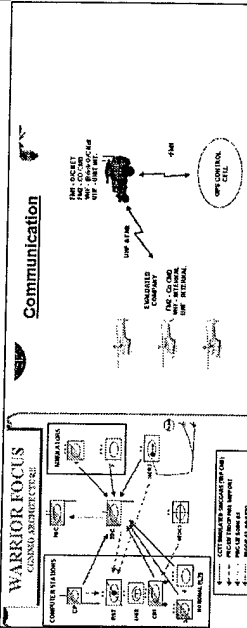
Component/Element Name	Descriptions	Examples
Infrastructure Factors	Utilities, communication network, sewerage, and transportation networks of the area.	The major arteries run north and south, 31W and I-65. Each has a paved surface and is viable in all weather conditions. The roads have from two to six lanes. Railroads run parallel to these roads. Coal generated electricity is available for the operations. All cities and villages throughout area of operation have adequate sewerage.
Exercise Control Materials		
<i>Exercise Storyboard</i>	The script for the exercise. It identifies the events (i.e., what is going to happen in the exercise in terms of cues/responses) and the approximate event times.	
Event	Small well-defined segments of an exercise. Each event uses cues to cause a specified unit action that represents performance of one or more tasks.	Occupation of a BP Displacement Rehearsal Rearm and Refuel
Cues	Stimuli that prompt unit performance.	Reports & Orders Scripted Messages Tactical & Administrative Occurrences or actions
Unit Responses/Tasks	Unit performances expected to occur in response to cues.	Unit crosses PL ALPHA
Exercise Execution Timeline	The timeline for the occurrence of events (i.e., cues/responses) included in the exercise storyboard.	0800 – Send FRAGO #1

Component/Element Name	Descriptions	Examples
<i>Exercise Support Personnel Guidelines</i>	Execution-focused instructions for all supporting personnel that direct performance of activities that support the training unit's performance.	
Role	The function an individual provides or portrays during the exercise.	BLUFOR Workstation Operator OPFOR Commander FABTOC Workstation Operator Fire Support Officer Refugee
Duties	Activities required to perform a role or function during the exercise.	<ul style="list-style-type: none"> • Initialize workstation • Verify OPFOR starting locations • Conduct security zone reconnaissance • Conduct a strong point defense
Location	The location(s) of the supporting personnel by role.	OPFOR SAF Room –OPFOR Workstation B
Tactical Purpose	The mission and/or concept of the operation for the elements controlled and represented during the exercise.	An OPFOR MIBn (+) supported by a Tank Company and 2S1 Battery will conduct an attack through Brown Pass, vic NK337180, to key the actions of the training unit.

Component/Element Name	Descriptions	Examples
Execution Guidance	Specific instructions for accomplishing the tactical purpose in the exercise.	At the start of the exercise, the OPFOR CRP is located at NK461132 in a traveling formation with the T80s leading, with the NBC recon squad and an engineer recon section following. When the BLUFOR platoon passes CP 56, start the 2 HIND-Ds and let them run their course. At the direction of the O/C (after the BLUFOR platoon passes CP 51), you will execute OPFOR PLATOON Traveling CIS. When the CRP(+) makes contact with the BLUFOR, it will engage the tank platoon. When one vehicle from the MIP is lost, withdraw the CRP(+) toward CP 8.
Unit Starting Locations	Locations of the elements controlled and represented by the workstations as well as any other related graphic control measures.	Artillery Battery – NK600500
Unit ID	The alphanumeric identification of a unit controlled by a workstation.	1/A/1-5F
Unit Type	The type of unit controlled by the workstation.	BLUFOR MECH PLATOON BLUFOR ARTILLERY UNIT OPFOR DI SQUAD OPFOR TANK PLATOON
Grid Coordinate	A grid coordinate for the unit location.	NK450001
Control Measures List	List or sketch used to depict actions, units, and tactical tasks. It may also include obstacles, boundaries, fire support control measures, and targets.	Target Reference Points Unit Boundaries Coordinating Point PAA
Control Measure Type	The type of control measure needed to support the exercise.	Target Reference Points Boundaries Coordinating Point Contact Points

Component/Element Name	Descriptions	Examples
Control Measure ID	The name or numbers identifying a control measure.	AL2011 CP24 PL PHOENIX
Control Measure Grid Coordinate	The grid coordinate for a control measure.	NK335362
Target Array	The type, location, and sequence of targets including the amount of time a target is displayed on a range.	
Target Type	An object, vehicle, and/or individual that is the aiming point of any weapon or weapons system.	Frontal Tank Moving Flank Tank RPG Team
Target Quantity	The number of targets needed to support the exercise.	4 BMPs 2 Tanks
Target Position	The range of a target from the firing line.	600-800 Meters 400-600 Meters
Target Initiation	The point in the exercise by time or event when the target needs to be exposed.	Unit crosses over PL Alpha
Exposure Time	The length of time a target is available to be engaged.	0930-Range crew emplaces frontal tank 9 Seconds 60 Seconds
Engagement Criteria	Those circumstances that allow engagement of a force without a specific command to do so. This may include a point or line on the ground that a force crosses or an event or action that a force does. Additionally, may include opening range and/or fire status.	Direct fire engagements will begin when BLUFOR main body elements are between TRP 001 and TRP 002.
Rules of Engagement	Directives that delineate the circumstances and limitations under which forces initiate and/or continue combat engagements.	Recon elements will use direct fire only for self-defense.

Component/Element Name	Descriptions	Examples
<i>Administrative Training Rules</i>	The basic guidelines and procedures for the use of combat, combat support, and combat service support systems within the limitations and restrictions of the training environment.	
Army Aviation	Administrative rules to define the use and the results of Army Aviation activities during the exercise.	Helicopters assessed as casualties will be directed to land by O/Cs as near to the engagement location as safety considerations will allow. After the pilot informs his unit of his status, no further radio communications will be allowed by a "killed" helicopter.
Air Defense	Administrative rules to define the use and results of air defense during the exercise.	Aircraft engaged by Stinger missiles will be assessed as killed unless the aircraft disperses flares and takes evasive action.
Civilians on Battlefield	Administrative rules to define the use and results of civilians on the battlefield during the exercise.	All civilians must wear MILES on the battlefield.
Combat Electronic Warfare	Administrative rules to define the use and results of combat electronic warfare during the exercise.	Tactical MEDEVAC frequencies may not be jammed.
Combat Service Support	Administrative rules that define the use and results of combat service support activities during the exercise.	KIAs are reconstituted one hour after casualty feeder reports have been submitted to BDE S-1.
Command & Control	Administrative rules that define the use and results of command and control activities during an exercise.	SINGARS frequency hopping may not be used during the exercise.
Direct Fire Engagements	Administrative rules that define the use and results of direct fire engagements during an exercise.	Crewmen of vehicles assessed as direct fire hits are considered KIA.
Dismounted Operations	Administrative rules that define the use and results of dismounted operations and reconnaissance during the exercise.	Blanks will never be fired at personnel within 20 feet.

Component/Element Name	Descriptions	Examples
Fire Support	Administrative rules that define the use and results of fire support during the exercise.	O/Cs or fire markers throw ground burst and fire air burst simulators to replicate incoming artillery. Casualties are assessed based on the number and type of rounds falling in the impact area. Personnel and vehicles are assessed based on the BDA table.
Mobility & Survivability	Administrative rules that define the use and results of mobility and survivability operations during the exercise.	All mines are assumed to have anti-handling capability.
NBC	Administrative rules that define the use and results of NBC activities during the exercise.	During decontamination operations, commercial laundry detergent will be used in lieu of STP and DS2.
Prisoners of War Considerations	Administrative rules that define the treatment and activities associated with the handling of POWs during the exercise.	The upper right hand pocket is a "safe" pocket and may not be searched.
TACAIR	Administrative rules that define the use and results of TACAIR activities during the exercise.	BDA assessments will be based on aircraft altitude at the time of release.
Communication		
Call Signs	The call signs for the training unit and supporting personnel.	Black 6 Saber 7
Communication Network Diagram	A diagram that identifies the stations on the tactical and administrative network and the hierarchy of communications for the exercise.	 <p>The diagram, titled 'Warrior Focus Command Structure', illustrates the communication network. It shows a central 'OPERATIONS CENTER' connected to a 'FORWARD AIR CONTROLLER' and several 'SQUADRON' units. Arrows indicate the flow of communication between these entities. A legend at the bottom right explains the symbols used for different types of communication links.</p>
Simulation Workarounds (Virtual/Constructive)	Guidelines that explain how to overcome simulation limitations.	Manned module crews can detect and cross over tunnels during the exercise. However, when crews cross over the tunnels the module "falls"

Component/Element Name	Descriptions	Examples
Exercise Set-Up Materials		through the database, flipping the module and killing the crew. If this occurs, you will need to pause the exercise, reposition the module in a new grid location, and restart the exercise.
Training Area/Range (Live)	The range or maneuver area for which the exercise was developed.	Fort Hood Training Area 41-47 Drop Zone Zulu
Terrain Database (Virtual/Constructive)	The digital terrain for which the exercise was developed.	CCTT Primary 2 – Central Europe BBS- National Training Center
Training Site/Range Preparation	The unit and/or site activities required to conduct the exercise.	OPFOR needs to setup obstacles and traps prior to the unit FTX.
Exercise Date & Time Group	The date and time of exercise activities.	021300MAR022
Force Structure		
BLUFOR Task Organization	The composition of the friendly forces in the exercise.	Armor Heavy Task Force (2 Tank Co, 1 Mech Co), Engineer Co, and an ADA Plt
OPFOR Task Organization	The composition of the enemy forces in the exercise.	A MIBn supported by the mine warfare Plt of its parent Bde's Engineer Co
White Elements	The civilian agencies and elements involved in the exercise.	40 Red Cross relief workers Electrical team from the city public works department 300 refugees with 50 goats
Green Elements	The non-combatants involved in the exercise.	French Armor Bde
Classes of Supply	Lists the logistic requirements (live or simulated) in terms of the amount of classes of supply required for the exercise.	
Class I	Subsistence items and gratuitous-issue health and comfort items.	

Component/Element Name	Descriptions	Examples
Subsistence Items	The types of meals ready to eat (MRE), T-rations, fresh fruits, and vegetables.	
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the items.	
Unit of Issue	The item quantity as issued.	
Gratuitous-issue Health Items		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Gratuitous-issue Comfort Items		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class II	Clothing, individual equipment, tentage, organizational tool sets and kits, hand tools, maps, and administrative and housekeeping supplies and equipment.	
Clothing		BDU NOMEX
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Individual Equipment		

Component/Element Name	Descriptions	Examples
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Tentage		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Organizational Tool Sets and Kits		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Hand Tools		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock number of the item.	
Unit of Issue	The item quantity as issued.	
Maps		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock number of the item.	
Unit of Issue	The item quantity as issued.	
DMA Stock Number	The stock number of the item.	
Edition Number	The edition of the item.	
Quantity	The item quantity as issued.	
Administrative and Housekeeping Supplies		
Nomenclature	The names/descriptions of items needed to support the exercise.	

Component/Element Name	Descriptions	Examples
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Administrative and Housekeeping Equipment		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class III	Petroleum fuels, lubricants, hydraulic and insulating oils, preservative, liquids and gases, bulk chemical products, coolants, deicer and antifreeze compounds, components and additives of petroleum and chemical products, and coal.	
Petroleum fuels		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Lubricants		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock number of the item.	
Unit of Issue	The item quantity as issued.	
Hydraulic and insulating oils		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	

Component/Element Name	Descriptions	Examples
Preservative		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock number of the item.	
Unit of Issue	The item quantity as issued.	
Liquids and Gases		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Bulk Chemical Products		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Coolants		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Deicer and Antifreeze Compounds		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Additives of Petroleum		

Component/Element Name	Descriptions	Examples
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Chemical Products		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Coal		
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class IV	Construction materials including installed equipment, and all fortification and obstacle materials.	
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class V	Ammunition of all types including chemical, bombs, explosives, mines, fuses, detonators, pyrotechnics, missiles, rockets, propellants, and other associated items.	
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Nomenclature	The names/descriptions of items needed to support the exercise.	
DODIC	The department of defense item code.	
National Stock Number	The stock numbers of the item.	

Component/Element Name	Descriptions	Examples
Unit of Issue	The item quantity as issued.	
Class VI	Personal demand items such as health and hygiene products, writing materials, snack food, beverages, cigarettes, batteries, and cameras (nonmilitary items).	
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class VII	Major end items such as launchers, tanks, mobile machine shops, and vehicles.	
Nomenclature	The names/descriptions of items needed to support the exercise.	
LIN	The line number of the item.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class VIII	Medical materials including repair parts peculiar to medical equipment and management of blood.	
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class IX	Repair parts and components to include kits, assemblies and subassemblies (repairable or nonrepairable) that are required for maintenance support of all equipment.	
Nomenclature	The names/descriptions of items needed to support the exercise.	

Component/Element Name	Descriptions	Examples
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
Class X	Material required to support nonmilitary programs such as agricultural and economic development projects (not included in classes I-IX).	
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
MISC	Water, captured enemy material, and salvage material.	
Nomenclature	The names/descriptions of items needed to support the exercise.	
National Stock Number	The stock numbers of the item.	
Unit of Issue	The item quantity as issued.	
<i>Starting Locations</i> (Virtual/Constructive)	The individual soldier, vehicle, or unit grid locations at the start of the exercise.	
BLUFOR	The friendly soldier, vehicle, or unit grid locations at the start of the exercise.	NK600553
OPFOR	The enemy soldier, vehicle, or unit grid locations at the start of the exercise.	NK600542
White	The civilian agency and/or element grid locations at the start of the exercise.	NK600500
Green	The noncombatant grid locations at the start of the exercise.	NK123999

Component/Element Name	Descriptions	Examples
Starting Conditions (Virtual/Constructive)	The initial status for all entities at the start of the exercise.	
Orientation	The initial azimuth in degrees/mils for all entities at the start of the exercise.	270 Degrees
Formation	The formation the entities will be in at the start of the exercise.	Column, Wedge, Line
Spacing	The distance between entities at the start of the exercise.	200 Meters
Posture	The specific operational status and activities of the entities in the exercise.	Defend, Halt, Traveling Overwatch, Defilade
Opening Range	The opening range for the entities in the exercise.	3000 Meters
Fire Status	The fire status for the entities in the exercise.	Hold Fire Fire at Will Fire at Sector
Maintenance Status	The readiness of material/equipment that is in fact, or administratively classified as, unserviceable pending completion of required servicing or repairs. It is used to determine the probability of a maintenance fault.	Tanks 50% mission capable Bradleys 85% mission capable
Equipment Status	The initial equipment state for entities at the start of the exercise.	Mobility-kill, Firepower-kill, Mobility/firepower-kill, Catastrophic kill
Personnel Status	The condition of personnel.	KIA, WIA
Gunnery Competency	The skill level of the entities at the start of the exercise.	Novice, Competent, Marksman
Environmental Conditions (Virtual/Constructive)	The weather conditions at the start of the exercise.	

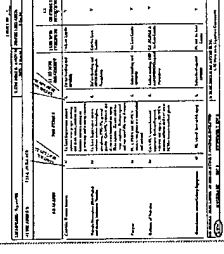
Component/Element Name	Descriptions	Examples
Barometric Pressure	The measure of atmospheric pressure specified at the start of the exercise.	29.7
Cloud Ceiling	The range of cloud cover specified at the start of the exercise.	5000 feet
Density Altitude	The height above mean sea level at which the existing density of the atmosphere would be duplicated in the standard atmosphere.	
Fog	The range of fog visibility specified at the start of the exercise.	500 meters
General Visibility	The range of visibility specified at the start of the exercise.	4000 meters
Haze	The range for haze visibility specified at the start of the exercise.	200 meters
Relative Humidity	The ratio, usually expressed as a percentage of air's water vapor content, to its water vapor capacity at a given temperature and pressure.	
Absolute Humidity	A ratio of the quantity of water vapor present per unit volume if air, usually expressed as grams per cubic meter or grains per cubic feet.	
Illumination	The light levels specified at the start of the exercise. This may include ambient light, lunar light (no moon, half moon, full moon, starlight), and solar light (dawn, dusk, high noon).	Full Moon
Precipitation	The measured, or estimated, rate of rainfall or snowfall specified at the start of the exercise.	
Surface Wind	The wind speed, direction, and gust speeds measured over the land or water specified at the start of the exercise.	
Temperature	A measure of hotness or coldness of the air near the ground specified at the start of the exercise.	Dry/Cold, Dry/Hot, Wet/Cold, Wet/Hot

Component/Element Name	Descriptions	Examples
Commo Plan		
Radio Nets	The radio nets for the training unit and supporting personnel.	A Co Cmd 1 Plt A Co
Radio Frequencies	The radio frequencies for the training unit and supporting personnel.	31.00 32.45 31.10 41.25
Simulation File(s) (Virtual/Constructive)	The electronic file(s) that load exercise starting data into the simulator.	
Evaluation Plan		
Observation Plan	The plan for observing and recording unit task performance.	
Observation Role	List of individuals who act as observers/controllers and their roles in the exercise.	S-2 O/C S-3 O/C Tank Crew Evaluator Scout Plt Observer
Observation Duties	The tasks required to perform the observation role or function during the exercise.	<ul style="list-style-type: none"> Observe S-2 and S-2 section Apply battlefield effects near Main CP as required or O/O
Observation Location	The location or point-of-view, by task or event, the O/C needs to observe during the exercise.	Main CP
Observation Schedule	A list observation events or activities and when they occur.	<ul style="list-style-type: none"> Planning 0900-1200 Bde Rehearsal 1400 LD 2100
Observation Focus	The task objectives and outcomes as well as any other information the O/C needs to be aware of while observing unit task performance.	Observe interaction between the S-2 and the Bde engineer during the development of the situation template as part of Bde staff task 71-TS-6010 Conduct IPB.

Component/Element Name	Descriptions	Examples
METL Tasks Supported	The METL tasks supported by the exercise.	Mobilize and Deploy Defend
Collective Tasks Trained	The tasks, drawn from the appropriate Mission Training Plan trained in the exercise, that support the METL tasks trained.	17-3-1016 Conduct Tactical Movement 17-3-0221 Execute Actions on Contact 17-3-0219 Conduct an Attack by Fire
Supporting Collective Tasks	The subordinate unit Mission Training Plan tasks trained in the exercise that support the collective tasks trained.	17-3-0065 Conduct Troop Leading Procedures
Supporting Individual Tasks	The individual tasks trained in the exercise that support the collective tasks trained.	17-3-0219 Engage Targets
Observation Tools	The devices the O/C uses to collect and record observations on unit task performance.	Training & Evaluation Outlines Score Sheets Observation Forms STAARS
AAR Plan	The plan for providing focused feedback to the training unit.	
AAR Role	The individuals who facilitate the AAR during an exercise.	S-2 Observer/Controller Senior Observer/Controller
AAR Focus	Key points to discuss during the AAR.	<ul style="list-style-type: none"> ▪ FASCAM employment and S-2, FSO, and engineer coordination ▪ Combat power regeneration and logistics operations in Bde
AAR Technique	The method used to organize the AAR discussion.	Chronological Key Event BOS
AAR Attendees	The training unit and supporting personnel who attend and participate in the AAR(s).	TCs, BCs, 1SG, XO, Maint PSG, MORT Sec Sgt, FIST NCOIC, XO, Trp Co

Component/Element Name	Descriptions	Examples									
AAR Schedule	List, by time or event occurrences, when AARs are conducted.	<p>AAR PURPOSE Provides immediate feedback on specific training activities. This allows units to identify strengths and areas to improve and provides them an opportunity to discuss and learn from their mistakes and meet Army standards.</p> <p>Schedule</p> <table border="1"> <thead> <tr> <th>Unit</th> <th>Date & Location</th> <th>Attendees</th> </tr> </thead> <tbody> <tr> <td>1st CD</td> <td>11 Feb 04, Ft. Belvoir, IL</td> <td>1st CD and Commanders</td> </tr> <tr> <td>2nd CD</td> <td>11 Feb 04, Ft. Belvoir, IL</td> <td>2nd CD and Commanders</td> </tr> </tbody> </table> <p>AAR Site</p> <p>1-337th Aviation Battalion personnel are responsible for AAR site set-up. AAR site will be located in the Goddard AAR Simulation Building.</p>	Unit	Date & Location	Attendees	1st CD	11 Feb 04, Ft. Belvoir, IL	1st CD and Commanders	2nd CD	11 Feb 04, Ft. Belvoir, IL	2nd CD and Commanders
Unit	Date & Location	Attendees									
1st CD	11 Feb 04, Ft. Belvoir, IL	1st CD and Commanders									
2nd CD	11 Feb 04, Ft. Belvoir, IL	2nd CD and Commanders									
AAR Locations	A diagram or narrative identifying the location of the AARs and any special set-up requirements.										
AAR Type	The form of AAR being conducted for the exercise. This can include both an informal and formal AAR.	Staff Section AAR Key Leaders AAR									
AAR Tools	The devices used to support the AAR discussion.	Training & Evaluation Outlines AAR Worksheet Data Analysis Recording (DAR) reports									
Administrative Materials											
Planning Timeline	A schedule of major activities involved in the development, preparation, and execution of the exercise. It may include activities completed by unit personnel, training site personnel, and/or supporting personnel.	<p>3 Dec Squadron Commander's Guidance</p> <p>15 March Brief the Concept</p> <p>26 April TSP to Janus Site</p> <p>30 May Janus team sets up site</p> <p>3 June Janus exercise</p> <p>4 June Janus team break down site</p>									
Date	The date an activity is to occur.	3 Dec									

Component/Element Name	Descriptions	Examples
Event/Activity	The major administrative activities involved in the development, preparation, and execution of an exercise.	Squadron Commander's Guidance
Who	The person responsible for completing the activity.	Major Smith
<i>Exercise Schedule</i>	A timetable for the training unit to plan when to be at the site and when major events will occur during the training.	2 June 0800-0900 Janus Concept Brief 3 June 0800 First Formation 1100-1145 Lunch 1200-1300 Squadron AAR 4 June 0800-0900 Issue FRAGO 1100-1145 Lunch 1200-1300 Squadron AAR 1330 Exercise Complete 1400 Unit Departs
Date	The date an activity is to occur.	2 June
Time	The time for the occurrence of activities.	0800-0900
Event/Activity	The major administrative activities involved in preparing, executing, and assessing an exercise.	Janus Concept Brief
<i>Personnel Requirements</i>	The logistic and personnel requirements necessary for the exercise.	
Personnel Required	Lists the personnel and quantity needed to support the exercise.	
Observer/Controller	Individuals who observe the unit's task performance, control the exercise, and provide focused feedback based on the observations.	1 Tank Crew Evaluator 1 S-2 Observer/Controller
Higher/Adjacent/Subordinate Units	Individuals who represent the Higher, Adjacent, and/or Subordinate units in the exercise.	1 G3 52 nd Division 1 201 st ACR

Component/Element Name	Descriptions	Examples
OPFOR Units	Individuals or unit that represent the OPFOR in the exercise.	1 Opposing Force Workstation Operator
Civilians/Government Agencies	Individuals who represent civilians on the battlefield and/or government agencies in the exercise.	1 Refugee
Administrative Support	Individuals who support the training unit during the exercise.	1 Range Detail (INCO, 5 Soldiers) 1 Range OIC/NCOIC 1 Range Safety Officer 1 Fire Support Workstation Operator 1 CTCP Operator
Personnel Qualifications	The prerequisite knowledge, experience, skills, and abilities an individual must possess to fill a specific exercise position.	
Military Occupation Specialty	An alphanumeric code that describes the skill level and military job title required for filling the specific exercise position.	12B30 Combat Engineer Staff Sgt
Rank	The military grade title required for filling the specific exercise position.	LTC, Major, Captain
Military Education/Experience	The military schools and previous experience required for filling the specific exercise position.	The O/C needs to be a Graduate of Command and General Staff College (CGSC) and have previous battalion-level command experience.
Risk Assessment & Management	The process of detecting, assessing, and controlling risk arising from operational factors and making the decisions that balance risk costs with mission benefits.	

Component/Element Name	Descriptions	Examples
Environmental Considerations	Administrative rules that define the environmental precautions to be observed during the exercise.	<p>Spill Response If a POL spill occurs, Units shall take the following actions without jeopardizing the health and welfare of personnel:</p> <ol style="list-style-type: none"> 1. Identify the spill or leak source 2. Ensure the safety of all personnel 3. Attempt to stop flow of material, if possible. Turn off valves or other spill sources 4. Take corrective action 5. Report spill to Range Control <p>Wildlife Do not feed wildlife. Feeding wildlife will cause them to lose their fear of humans and may cause them to become more aggressive.</p>
Safety Considerations	Administrative rules that define the safety precautions to be observed during the exercise.	<p>Heat Exhaustion <u>Symptoms.</u> Profuse sweating, headache, tingling sensations in the extremities, pallor, nausea, vomiting, weakness, rapid pulse. <u>Treatment.</u> Remove the patient to cool place and request a medic. Elevate the patient's legs, and give cool water. Seek medical attention.</p>

Component/Element Name	Descriptions	Examples
References	The titles and publications data for all supporting documentation (paper-based and electronic) used in the preparation of the exercise.	
Document List	A list of documents (electronic and/or paper) used to develop the exercise or needed to support the exercise. It may include Army Regulations, ARTEPS, Field Manuals, maps, tactics, techniques, and procedures, unit SOP, and site SOP.	FM 17-15 Tank Platoon FM 17-97 Cavalry Troop FM 17-98 Scout Platoon FM 7-90 Tactical Employment of Mortars
Key Word Index	A metafile of words produced automatically by the "TSP tool" for the purpose of electronic search.	

Appendix F

Collective Exercise TSP Element List – TR 350-70 Crosswalk

Collective Exercise TSP Element List -- TR 350-70 Crosswalk

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
TSP Identification		
<i>Exercise Identifier</i>		
Exercise Title	No direct counterpart	
Echelon(s)	Definition/Objective/Environment	The Definition/Objective/Environment in TR 350-70 provides information on the type of unit being trained, echelon level, and terrain. It also includes the objectives of the TSP described as outcomes of training, training conditions, environment and general level of difficulty.
Unit Type	Definition/Objective/Environment	The Definition/Objective/Environment in TR 350-70 provides information on the type of unit being trained, echelon level, and terrain. It also includes the objectives of the TSP described as outcomes of training, training conditions, environment and general level of difficulty.
Unit Designation	Target Audience	Unit Designation in MAMUT is the unit the exercise is designed to train. Target Audience in TR 350-70 is the soldiers/leaders/unit that will participate in the training.
Mission Type	No direct counterpart, however, information may be derived from Definition/Objective/Environment.	The Definition/Objective/Environment in TR 350-70 provides information on the type of unit being trained, echelon level, and terrain. It also includes the objectives of the TSP described as outcomes of training, training conditions, environment and general level of difficulty.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Exercise Type	No direct counterpart, however, information may be derived from Definition/Objective/Environment.	The Definition/Objective/Environment in TR 350-70 provides information on the type of unit being trained, echelon level, and terrain. It also includes the objectives of the TSP described as outcomes of training, training conditions, environment and general level of difficulty.
TADSS	Alternative TADSS	TADSS in MAMUT are the training aids, devices, simulators, and simulations needed to support the exercise. TADSS in TR 350-70 lists the alternative or supplemental TADSS (MILES or other simulation) that are to be used during the execution of the exercise.
Exercise Proponent	History/NBC	Exercise Proponent in MAMUT lists the proponent for the exercise, if applicable. History/NBC in TR 350-70 identifies the TSP developer, POC, POC telephone number, approving authority (proponent), date of preparation and status. It also includes any comments about the TSP that the developer needs to provide to other units using the TSP. Additionally, provides information concerning NBC in exercise.
<i>TSP Developer/POC Information</i>		

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Developer/POC Name(s)	History/NBC	History/NBC in TR 350-70 identifies the TSP developer, POC, POC telephone number, approving authority (proponent), date of preparation and status. It also includes any comments about the TSP that the developer needs to provide to other units using the TSP. Additionally, provides information concerning NBC in exercise.
Developer/POC Unit Identification Code and/or Organization(s)	No direct counterpart, however, information may be derived from History/NBC	Developer/POC Unit Identification Code and/or Organization(s) in MAMUT lists the alphanumeric code that uniquely identifies the TSP developer's/POC's unit. History/NBC in TR 350-70 identifies the TSP developer, POC, POC telephone number, approving authority (proponent), date of preparation and status. It also includes any comments about the TSP that the developer needs to provide to other units using the TSP. Additionally, provides information concerning NBC in exercise.
Developer/POC Phone Number(s)	History/NBC	History/NBC in TR 350-70 identifies the TSP developer, POC, POC telephone number, approving authority (proponent), date of preparation and status. It also includes any comments about the TSP that the developer needs to provide to other units using the TSP. Additionally, provides information concerning NBC in exercise.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
<i>TSP Development Status</i>		
Status	History/NBC	<p>Status in MAMUT is the state of development for a given TSP.</p> <p>History/NBC in TR 350-70 identifies the TSP developer, POC, POC telephone number, approving authority (proponent), date of preparation and status. It also includes any comments about the TSP that the developer needs to provide to other units using the TSP. Additionally, provides information concerning NBC in exercise.</p>
Date	History/NBC	<p>Date is the TSP Development status date.</p> <p>History/NBC in TR 350-70 identifies the TSP developer, POC, POC telephone number, approving authority (proponent), date of preparation and status. It also includes any comments about the TSP that the developer needs to provide to other units using the TSP. Additionally, provides information concerning NBC in exercise.</p>
Exercise Overview		

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
<i>Exercise Narrative</i>	No direct counterpart, however, information may be derived from Scenario Materials.	<p>Scenario Materials in TR 350-70 provides the events that lead-up to the points requiring unit to execute their OPORD thus begin the exercise. Includes the facts necessary to place units in the desired tactical settings prior to STAREX. Scenario should also include enough information to guide O/Cs so exercise will progress to plan. Normally narrative but should include reference to Overlays & OPORDS.</p> <p>Exercise Narrative in MAMUT is a brief description of the exercise's tactical storyline (including the unit's mission or actions) and a general statement of the storyline conditions that are key to supporting the training objectives.</p>
Exercise Storyline	No direct counterpart, however, information may be derived from Scenario Materials.	
Conditions	No direct counterpart	
Nature of Threat	No direct counterpart, however, information may be derived from OPFOR Package Overview/Orders.	
Exercise Difficulty	No direct counterpart	
<i>Training Objective</i>		
METL Tasks Supported	No direct counterpart, however, information may be derived from Definition/Objective/Environment.	The Definition/Objective/Environment in TR 350-70 provides information on the type of unit being trained, echelon level, and terrain. It also includes the objectives of the TSP described as outcomes of training, training conditions, environment and general level of difficulty.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Task Number	No direct counterpart	
Task Title	No direct counterpart	
Task Date	No direct counterpart	
Collective Tasks Trained	Event Task Summary	The Event Task Summary in TR 350-70 is a SATS generated report that contains METL/ECTL tasks.
	Collective Task T&EOs/Individual Task Summaries	The T&EOs in TR 350-70 for the tasks to be trained including the tasks, conditions, and standard, summary information concerning collective training objectives, as well as individual and leader training tasks, which support training objectives. They also provide information concerning resource requirements and evaluation standards and procedures applicable to a training situation.
	Task Number	
	Task Title	
	Task Condition	
	Task Standard	
Task Date	No direct counterpart	
Exercise Diagram	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Exercise Development Notes	History/NBC	History/NBC in TR 350-70 identifies the TSP developer, POC, POC telephone number, approving authority (proponent), date of preparation and status. It also includes any comments about the TSP that the developer needs to provide to other units using the TSP. Additionally, provides information concerning NBC in exercise.
Exercise Execution Notes	No direct counterpart	
Tactical Materials		
<i>Orders/Plans</i> Orders/Plans	Operations Orders OPORD Execution Matrix	
Transmission Methods		
<i>Overlays</i>	No direct counterpart	
Overlays	No direct counterpart	
Transmission Methods	No direct counterpart	
<i>Tactical Reports</i>	No direct counterpart	
Reports	No direct counterpart	
Transmission Methods	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
<i>Road to War</i>	Scenario Materials	Scenario Materials in TR 350-70 provides the events that lead-up to the points requiring unit to execute their OPORD thus begin the exercise. Includes the facts necessary to place units in the desired tactical settings prior to STARTEX. Scenario should also include enough information to guide O/Cs so exercise will progress to plan. Normally narrative but should include reference to Overlays & OPORDS. Road to War in MAMUT is a graphic and/or narrative description of the events leading up to the situation at the start of the exercise.
Geographical Location	No direct counterpart, however, information may be derived from Scenario Materials.	
Geographical Setting	No direct counterpart, however, information may be derived from Scenario Materials.	
Political Factors	No direct counterpart, however, information may be derived from Scenario Materials.	
Economic Factors	No direct counterpart, however, information may be derived from Scenario Materials.	
Social Factors	No direct counterpart, however, information may be derived from Scenario Materials.	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Military Factors	No direct counterpart, however, information may be derived from Scenario Materials.	
Infrastructure Factors	No direct counterpart, however, information may be derived from Scenario Materials.	
<i>Exercise Storyboard</i>		
Event	No direct counterpart, however, information may be derived from Training Sequence and Duration.	Event in MAMUT is small well-defined segments of an exercise. Each event uses cues to cause a specified unit action that represents performance of one or more tasks. Training Sequence and Duration in TR 350-70 is the sequencing and duration time of all event phases.
Cues	No direct counterpart	
Unit Responses/Tasks	No direct counterpart	
Exercise Execution Timeline	Training Sequence and Duration	Exercise Execution Timeline in MAMUT is the timeline for the occurrence of events (i.e., cues/responses) included in the exercise storyboard. Training Sequence and Duration in TR 350-70 is the sequencing and duration time of all event phases.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
<i>Exercise Support Personnel Guidelines</i>	No direct counterpart, however, information can be derived from the OPFOR Package Overview/Orders for the OPFOR Support Position.	OPFOR Package Overview/Orders in TR 350-70 is an OPFOR Package that provides all the pertinent OPFOR information (size, equipment available, OPFOR training objectives, OPFOR scenario) as well as the OPFOR OPORD to plan/prepare and initialize the OPFOR tactical actions. Exercise Support Personnel Guidelines in MAMUT are execution-focused instructions for all supporting personnel that direct performance of activities that support the training unit's performance.
Role	No direct counterpart, however, information may be derived from ROE/Tasks (OPFOR Tab) for the OPFOR Support Position.	
Duties	No direct counterpart, however, information can be derived from the OPFOR ROE/Tasks for the OPFOR Support Position.	
Location	No direct counterpart	
Tactical Purpose	No direct counterpart, however, information can be derived from the OPFOR ROE/Tasks for the OPFOR Support Position.	OPFOR Package Overview/Orders in TR 350-70 is an OPFOR Package that provides all the pertinent OPFOR information (size, equipment available, OPFOR training objectives, OPFOR scenario) as well as the OPFOR OPORD to plan/prepare and initialize the OPFOR tactical actions. Tactical Purpose in MAMUT is the mission and/or concept of the operation for the elements controlled and represented during the exercise.
Execution Guidance	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Unit Starting Locations	No direct counterpart, however, information may be derived from Initialization Data (OPFOR Tab) for the OPFOR Support Position.	
Unit ID	No direct counterpart	
Unit Type	No direct counterpart	
Grid Coordinate	No direct counterpart	
Control Measures List	No direct counterpart	
Control Measure Type	No direct counterpart	
Control Measure ID	No direct counterpart	
Control Measure Grid Coordinate	No direct counterpart	
Target Array	No direct counterpart	
Target Type	No direct counterpart	
Target Quantity	No direct counterpart	
Target Position	No direct counterpart	
Target Ignition	No direct counterpart	
Exposure Time	No direct counterpart	
Engagement Criteria	No direct counterpart, however, information may be derived from OPFOR Overview/Orders for the OPFOR Support Position.	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Rules of Engagement	No direct counterpart, however, information may be derived from OPFOR Overview/Orders for the OPFOR Support Position.	
<i>Administrative Training Rules</i>	Administrative Training Rules	ATR in TR 350-70 are the rules of engagement any/or basic guidelines and procedures for the conduct of training exercises. ATR in MAMUT is the basic guidelines and procedures for the use of combat, combat support, and combat service support systems within the limitations and restrictions of the training environment.
Army Aviation	Army Aviation/Casualty Assessment	
Air Defense	AD & TACAIR/CEW	
Civilians on Battlefield	No direct counterpart	
Combat Electronic Warfare	AD & TACAIR/CEW	
Combat Service Support	NBC/CSS	
Command & Control	No direct counterpart	
Direct Fire Engagements	Direct Fire Engagements	
Dismounted Operations	Dismounted Infantry & Engineers	
Fire Support	Fire Support	
Mobility & Survivability	No direct counterpart	
NBC	NBC/CSS	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Prisoners of War Considerations	POW	
TACAIR	AD & TACAIR/CEW	
<i>Communication</i>		
Call Signs	No direct counterpart	
Communication Network Diagram	No direct counterpart	
Simulation Workarounds (Virtual/Constructive)	Contingency Workarounds	Contingency Workarounds in TR 350-70 are workarounds to overcome partial or total simulation failures during an exercise so units can still accomplish their training objectives. Simulation Workarounds in MAMUT are guidelines that explain how to overcome simulation limitations.
Exercise Set-Up Materials		
Training Area/Range (Live)	Training Area Requirements	
Terrain Database (Virtual/Constructive)	No direct counterpart	
Training Site/Range Preparation	No direct counterpart	
Exercise Date & Time Group	No direct counterpart	
Force Structure		
BLUFOR Task Organization	No direct counterpart, however, information may be derived from Semi-Automated Forces.	Semi-Automated Forces in TR 350-70 is the identification and requirements for SAF according to the specific simulation system capabilities and training requirements. BLUFOR Task Organization in MAMUT is the composition of the friendly forces in the exercise.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
OPFOR Task Organization	No direct counterpart, however, information may be derived from Semi-Automated Forces and Initialization Data (OPFOR Tab).	<p>Semi-Automated Forces in TR 350-70 is the identification and requirements for SAF according to the specific simulation system capabilities and training requirements.</p> <p>Initialization Data (OPFOR Tab) in TR 350-70 provides initialization data (primarily for Virtual/Constructive simulations) on units, systems/entities, initial positions, initial orientation, and formation types for the OPFOR and noncombatants involved in the event.</p> <p>OPFOR Task Organization in MAMUT is the composition of the friendly forces in the exercise.</p>
White Elements	No direct counterpart, however, information may be derived from Semi-Automated Forces and Initialization Data (OPFOR Tab).	<p>Semi-Automated Forces in TR 350-70 is the identification and requirements for SAF according to the specific simulation system capabilities and training requirements.</p> <p>Initialization Data (OPFOR Tab) in TR 350-70 provides initialization data (primarily for Virtual/Constructive simulations) on units, systems/entities, initial positions, initial orientation, and formation types for the OPFOR and noncombatants involved in the event.</p> <p>White Elements in MAMUT is the civilian agencies and elements involved in the exercise.</p>

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Green Elements	No direct counterpart, however, information may be derived from Semi-Automated Forces and Initialization Data (OPFOR Tab).	<p>Semi-Automated Forces in TR 350-70 is the identification and requirements for SAF according to the specific simulation system capabilities and training requirements.</p> <p>Initialization Data (OPFOR Tab) in TR 350-70 provides initialization data (primarily for Virtual/Constructive simulations) on units, systems/entities, initial positions, initial orientation, and formation types for the OPFOR and noncombatants involved in the event.</p> <p>Green Elements in MAMUT is the non-combatants involved in the exercise.</p>
<i>Classes of Supply</i>	BLUFOR Logistics Support Requirements	<p>BLUFOR Logistics Support Requirements in TR 350-70 is a SATS provided report that provides the notional amounts of logistic requirements in terms of amounts by classes of supply.</p> <p>Classes of Supply in MAMUT lists the logistic requirements (live or simulated) in terms of the amount of classes of supply required for the exercise.</p>
Class I	No direct counterpart	
Subsistence Items	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Gratuitous-issue Health Items	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Gratuitous-issue Comfort Items	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class II	No direct counterpart	
Clothing	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Individual Equipment	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Tentage	No direct counterpart	
Nomenclature	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Organizational Tool Sets and Kits	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Hand Tools	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Maps	No direct counterpart	
DMA Stock Number	No direct counterpart	
Edition Number	No direct counterpart	
Quantity	No direct counterpart	
Administrative and Housekeeping Supplies	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Administrative and Housekeeping Equipment	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class III	Unit MTOE Equipment Requirements	Unit MTOE Equipment Requirements in TR 350-70 list the authorized equipment from Classes III and IX to be used during the exercise.
Petroleum fuels	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Lubricants	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Hydraulic and insulating oils	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Preservative	No direct counterpart	
Nomenclature	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Liquids and Gases	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Bulk Chemical Products	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Coolants	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Deicer and Antifreeze Compounds	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Additives of Petroleum	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Chemical Products	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Coal	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class IV	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class V	Unit Ammo Requirements	
Nomenclature	No direct counterpart	
DODIC	No direct counterpart	
National Stock Number	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Unit of Issue	No direct counterpart	
Class VI	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class VII	Unit Support Elements Equipment O/C Equipment/Facility Requirements Systems to Be Used	Unit Support Elements Equipment in TR 350-70 lists all the equipment to be brought by the subordinate units in support of the larger unit. O/C Equipment/Facility Requirements in TR 350-70 is the communication equipment, vehicles/driver support, exercise control facilities, and computer equipment needed to support O/C during exercise. Systems to be Used in TR 350-70 list the systems, such as (SARRSO, IVIS) to be used during the execution of the training event and any comments deemed appropriate by the TSP developer. Class VII in MAMUT lists the major end items (live or simulated) such as launchers, tanks, mobile machine shops, and vehicles.
Nomenclature	No direct counterpart	
LIN	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class VIII	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class IX	Unit MTOE Equipment Requirements Unit PLL	Unit MTOE Equipment Requirements in TR 350-70 list the authorized equipment from Classes III and IX to be used during the exercise. Unit PLL in TR 350-70 is the prescribed load list (repair parts) for the exercise.
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class X	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
MISC	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
<i>Starting Locations</i> (Virtual/Constructive)	Simulation Tab	Simulation Tab in TR 350-70 provides the set of initialization data. The TSP developer with the assistance of specific virtual or constructive system SOP can develop a properly formatted entity to include the identifying number of each instrumented location, heading, attitude, and speed of entities, and other initialization parameters.
BLUFOR	No direct counterpart	
OPFOR	Initialization Data (OPFOR Tab)	Initialization Data (OPFOR Tab) in TR 350-70 provides initialization data (primarily for Virtual/Constructive simulations) on units, systems/entities, initial positions, initial orientation, and formation types for the OPFOR and noncombatants involved in the event.
White	No direct counterpart	
Green	No direct counterpart	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
<i>Starting Conditions</i> (Virtual/Constructive)	Simulation Tab Initialization Data (OPFOR Tab)	Simulation Tab in TR 350-70 provides the set of initialization data. The TSP developer with the assistance of specific virtual or constructive system SOP can develop a properly formatted entity to include the identifying number of each instrumented location, heading, attitude, and speed of entities, and other initialization parameters. Initialization Data (OPFOR Tab) in TR 350-70 provides initialization data (primarily for Virtual/Constructive simulations) on units, systems/entities, initial positions, initial orientation, and formation types for the OPFOR and noncombatants involved in the event.
Orientation	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Formation	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Spacing	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Posture	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Opening Range (Virtual/Constructive/Live)	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Fire Status (Virtual/Constructive/Live)	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Maintenance Status	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Equipment Status	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Personnel Status	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
Gunnery Competency	No direct counterpart, however, information may be derived from Simulation Tab and Initialization data (OPFOR Tab).	
<i>Environmental Conditions</i> (Virtual/Constructive)	Environmental Tab	Environmental Tab in TR 350-70 identifies the environmental conditions (day/night, clouds, rain), use of NBC, and opposing forces size/capability.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Barometric Pressure	No direct counterpart, however, information may be derived from Environmental Tab.	
Cloud Ceiling	No direct counterpart, however, information may be derived from Environmental Tab.	
Density Altitude	No direct counterpart, however, information may be derived from Environmental Tab.	
Fog	No direct counterpart, however, information may be derived from Environmental Tab.	
General Visibility	No direct counterpart, however, information may be derived from Environmental Tab.	
Haze	No direct counterpart, however, information may be derived from Environmental Tab.	
Relative Humidity	No direct counterpart, however, information may be derived from Environmental Tab.	
Absolute Humidity	No direct counterpart, however, information may be derived from Environmental Tab.	
Illumination	No direct counterpart, however, information may be derived from Environmental Tab.	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Precipitation	No direct counterpart, however, information may be derived from Environmental Tab.	
Surface Wind	No direct counterpart, however, information may be derived from Environmental Tab.	
Temperature	No direct counterpart, however, information may be derived from Environmental Tab.	
<i>Commo Plan</i>	No direct counterpart	
Radio Nets	No direct counterpart	
Radio Frequencies	No direct counterpart	
<i>Simulation File(s)</i> (Virtual/Constructive)	No direct counterpart	
Evaluation Plan		
<i>Observation Plan</i>	No direct counterpart, however, information may be derived from O/C Preparation.	O/C Preparation in TR 350-70 provides the O/C with specific information for the successful accomplishment of a given event. This preparation familiarizes personnel with the duties, responsibilities, and procedures of the O/C during the exercise, scenario and background info, admin/logistical procedures, exercise area rules & safety requirements, how the O/C should interact with the unit during the exercise, and how to score the results of direct/indirect fire.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Observation Role	No direct counterpart, however, information may be derived from O/C Preparation.	Observation Role in MAMUT list of individuals who act as observers/controllers and their roles in the exercise.
Observation Duties	No direct counterpart, however, information may be derived from O/C Preparation.	Observation Duties in MAMUT lists the tasks required to perform the observation role or function during the exercise.
Observation Location	Qualifications/Location/Requirements	Qualifications/Location/Requirements in TR 350-70 describes the prerequisite capabilities, positions held, and previous training that an individual must possess to be an O/C for a particular event. It also indicates the location at the start of the exercise as well as other selected times when observations at a specific location is anticipated. Additionally, any logistical requirements the O/C must have to successfully observe and control the exercise.
Observation Schedule	No direct counterpart, however, information may be derived from Qualifications/Location/Requirements.	
Observation Focus	No direct counterpart, however, information may be derived from O/C Evaluation Objectives.	O/C Evaluation Objectives in TR 350-70 provides the evaluation objectives for the exercise.
METL Tasks Supported	No direct counterpart	
Collective Tasks Trained	No direct counterpart, however, information may be derived from Collective Task T&EOs/Individual Task Summaries.	Collective Tasks Trained in MAMUT is the tasks, drawn from the appropriate Mission Training Plan trained in the exercise, that support the METL tasks trained.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Supporting Collective Tasks	No direct counterpart, however, information may be derived from Collective Task T&EOs/Individual Task Summaries.	Collective Task T&EOs in TR 350-70 provide the T&EOs for the tasks to be trained including the tasks, conditions, and standard. Also provides summary information concerning collective training objectives as well as individual and leader training tasks, which support training objectives. Supporting Collective Tasks in MAMUT are the subordinate unit Mission Training Plan tasks trained in the exercise that support the collective tasks trained
Supporting Individual Tasks	No direct counterpart, however, information may be derived from Collective Task T&EOs/Individual Task Summaries.	Collective Task T&EOs in TR 350-70 provide the T&EOs for the tasks to be trained including the tasks, conditions, and standard. Also provides summary information concerning collective training objectives as well as individual and leader training tasks, which support training objectives. Supporting Individual Tasks in MAMUT are the individual tasks trained in the exercise that support the collective tasks trained.
Observation Tools	Collective Task T&EOs/Individual Task Summaries.	Collective Task T&EOs in TR 350-70 provide the T&EOs for the tasks to be trained including the tasks, conditions, and standard. Also provides summary information concerning collective training objectives as well as individual and leader training tasks, which support training objectives.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
<i>AAR Plan</i>	No direct counterpart, however, information may be derived from After Action Review/After Exercise Report.	After Action Review/After Exercise Report is a template that guides data collection, recognition of critical events and formatting of the AAR presentation. These templates provided the trainer with the MTP reference information (task, condition, and standard) for each task, the set of key doctrinal steps/thought processes for accomplishment of the task or mission.
AAR Role	No direct counterpart	
AAR Focus	No direct counterpart	
AAR Technique	No direct counterpart	
AAR Facilitators	No direct counterpart	
AAR Attendees	No direct counterpart	
AAR Schedule	No direct counterpart	
AAR Locations	No direct counterpart	
AAR Type	No direct counterpart	
AAR Tools	No direct counterpart	
Administrative Materials		

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Planning Timeline	<p>SATS Event Detail</p> <p>SATS Coordination Detail</p>	<p>SATS Event Detail in TR 350-70 is a SATS report that provides the capability of viewing and printing an event detail log. This report includes who is responsible for the detail, the supported event, the activity to be performed, the date/time/location of the activity and the assigned trainers.</p> <p>SATS Coordination Detail in TR 350-70 is a SATS report that provides the capability of viewing and printing the Coordination Activities. This report provides a listing of all the coordinating activities that must be performed and when they need to be accomplished in relation to the training event.</p> <p>Planning Timeline in MAMUT is a schedule of major activities involved in the development, preparation, and execution of the exercise. It may include activities completed by unit personnel, training site personnel, and/or supporting personnel.</p>
Date	No direct counterpart, however, information may be derived from SATS Event Detail and the SATS Coordination Detail	
Event/Activity	No direct counterpart, however, information may be derived from SATS Event Detail and the SATS Coordination Detail	
Who	No direct counterpart, however, information may be derived from SATS Event Detail and the SATS Coordination Detail	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Exercise Schedule	No direct counterpart, however, information may be derived from the SATS Event Detail and/or the SATS Coordination Detail.	Exercise Schedule in MAMUT is a timetable for the training unit to plan that indicates when to be at the site and when major events will occur during the training.
Date	No direct counterpart, however, information may be derived from the SATS Event Detail and/or the SATS Coordination Detail.	
Time	No direct counterpart, however, information may be derived from the SATS Event Detail and/or the SATS Coordination Detail.	
Event/Activity	No direct counterpart, however, information may be derived from the SATS Event Detail and/or the SATS Coordination Detail.	
Personnel Requirements		
Personnel Required	Support Personnel	Support Personnel in TR 350-70 lists the support personnel needed for the exercise to include MOS qualifications, amount of people required, exercise support position.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Observer/Controller	O/C Personnel	Observer/Controller in MAMUT are those individuals who observe the unit's task performance, control the exercise, and provide focused feedback based on the observations. O/C Personnel in TR 350-70 allows the TSP developer to designate a required O/C by rank, specific position during the exercise, and quantity needed for the exercise.
Higher/Adjacent/Subordinate Units	Support Personnel	Higher/Adjacent/Subordinate Units in MAMUT are those individuals who represent the Higher, Adjacent, and/or Subordinate units in the exercise. Support Personnel in TR 350-70 lists the support personnel needed for the exercise to include MOS qualifications, amount of people required, exercise support position.
OPFOR Units	No direct counterpart, however, information may be derived from OPFOR Package Overview/Orders	
Civilians/Government Agencies	Support Personnel	Civilians/Government Agencies in MAMUT are those individuals who represent civilians on the battlefield and/or government agencies in the exercise. Support Personnel in TR 350-70 lists the support personnel needed for the exercise to include MOS qualifications, amount of people required, exercise support position.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Administrative Support	Support Personnel	<p>Administrative Support in MAMUT are those individuals who support the training unit during the exercise.</p> <p>Support Personnel in TR 350-70 lists the support personnel needed for the exercise to include MOS qualifications, amount of people required, exercise support position.</p>
Personnel Qualifications	Support Personnel Qualifications/Location/Requirements	<p>Personnel Qualifications in MAMUT are the prerequisite knowledge, experience, skills, and abilities an individual must possess to fill a specific exercise position.</p> <p>Support Personnel in TR 350-70 lists the support personnel needed for the exercise to include MOS qualifications, amount of people required, exercise support position.</p> <p>Qualifications/Location/Requirements (Evaluator Support Materials) in TR 350-70 describes the prerequisite capabilities, positions held, and previous training that an individual must possess to be an O/C for a particular event. It also indicates the location at the start of the exercise as well as other selected times when observations at a specific location is anticipated. Additionally, any logistical requirements the O/C must have to successfully observe and control the exercise.</p>

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Military Occupation Specialty	Support Personnel	Military Occupation Specialty in MAMUT is the alphanumeric code that describes the skill level and military job title required for filling the specific exercise position. Support Personnel in TR 350-70 lists the support personnel needed for the exercise to include MOS qualifications, amount of people required, exercise support position.
Rank	No direct counterpart, however, information can be derived from Support Personnel.	
Military Education/Experience	No direct counterpart, however, information can be derived from Support Personnel.	
Risk Assessment & Management	Risk Identification Assessment Worksheet Risk Mitigation Worksheet Risk Leader Approval	
Environmental Considerations	No direct counterpart	
Safety Considerations	Safety Precautions	
References	References	
Document List	No direct counterpart, however, information may be derived from References.	

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
Key Word Index	No direct counterpart	
No direct counterpart	TSP Cover Page	TSP Cover Page in TR 350-70 provides cover page information.
No direct counterpart	TSP Preface Page	TSP Preface Page in TR 350-70 provides preface information.
No direct counterpart however information may be derived from Training Objectives.	Event Task Summary	The Event Task Summary is a SATS template that provides the METL/ECTL and non-METL/ECTL tasks and their associated individual tasks listed by responsible unit. This information is derived from the SATS Execution Matrix.
No direct counterpart	Table of Contents	Table of Contents in TR 350-70 provides a table of contents for the TSP.
No direct counterpart	CATS Gates	CATS Gates in TR 350-70 is a SATS non-editable report. It provides the CATS training proficiency gates for each task to be trained by the TSP.
	Participating Units	The Participating Units in TR 350-70 is pre-populated from SATS. It lists the BLUFOR & OPFOR units participating in the exercise.
No direct counterpart, however, information may be derived Classes of Supply, Force Structure, and Observation Tools. Additionally, information can be found in the Unit's SOP.	O/C Additional Information	O/C Additional Information in TR 350-71 identifies unit's MTOE & TDAs (equipment that the O/C can anticipate in the exercise), unit personnel status (defines c-w-r) and/or scoring instructions, unit's training to date, and unit's training SOP.
No direct counterpart, however, information can be derived from force structure, starting locations, starting status, and exercise support position (OPFOR) information.	Semi-Automated Forces	SAF in TR 350-70 is the identification and requirements for SAF according to the specific simulation system capabilities and training requirements.

TSP Component Comparison		
MAMUT Collective Element List	TR 350-70	Comments
MAMUT TSP Component/Elements can be organized to create a Leader's Training Guide.	Leader's Training Guide	Leader's Training Guide in TR 350-40 is a Train-the-Trainer guide identifying pre-training requirements (crew and or individual tasks), special knowledge requirements as well as describes how to modify the exercise while remaining within the simulation's capabilities. Additionally, provides guidelines for unit leaders to prepare for executing the training.
No direct counterpart.	Demonstration	Demonstration in TR 350-70 is a demonstration of a competent unit conducting the exercise (multimedia, PVD, text description with overlay outlining the TTP, video-taped AAR).
No direct counterpart, however, information may be derived from Classes of Supply.	SATS Resourcing BLUFOR	SATS Resourcing BLUFOR in TR 350-70 is a SATS provided report that provides all the resourcing data for the current training event which was entered under the Projections option within SATS and designed as a friendly force.
No direct counterpart, however, information may be derived from Classes of Supply.	SATS Resourcing OPFOR	SATS Resourcing OPFOR in TR 350-70 is a SATS provided report that provides all the resourcing data for the current training event which was entered under the Projections option within SATS and designed as an opposing force.
No direct counterpart, however, information may be derived from Classes of Supply.	OPFOR Logistics Report Requirements	OPFOR Logistics Report Requirements in TR 350-70 is a SATS provided report that provides the amounts of logistic requirements in terms of amounts by classes of supply for the OPFOR during the exercise.
No direct counterpart.	Glossary	Glossary in TR 350-70 is a list of terms/acronyms for the exercise.

Appendix G

Collective Exercise TSP Element List -- Collective WarFighter TSP Elements Crosswalk

Collective Exercise TSP Element List -- Collective WarFighter TSP Elements Crosswalk

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
TSP Identification		
<i>Exercise Identifier</i>		
Exercise Title	No direct counterpart	
Echelon	TSP Description	TSP Description in WF TSP is a clear and concise description of the TSP. This sub-component provides information on the type (Armor, Infantry, etc), echelon level (Co, Bn, BnTF, etc), and terrain (desert, mountainous, etc) of training for which this TSP provides products.
Unit Type	TSP Description	TSP Description in WF TSP is a clear and concise description of the TSP. This sub-component provides information on the type (Armor, Infantry, etc), echelon level (Co, Bn, BnTF, etc), and terrain (desert, mountainous, etc) of training for which this TSP provides products.
Unit Designation	Target Audience	Target Audience in WF TSP is composed of the soldiers/leaders/units that will undergo the proposed training.
		Unit Designation in MAMUT indicates the unit the exercise is designed to train.
Mission Type	No direct counterpart, however, some information may be derived from TSP Description and Target Audience.	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Exercise Type	TSP Collective Simulation & Exercise Type	TSP Collective Simulation and Exercise Type in WF TSP identifies the collective simulation and which type of exercise should be used in training. Exercise Type in MAMUT is the type of exercise to be trained as defined in Appendix C, FM 25-101 and/or gunnery tables.
Exercise Proponent	No direct counterpart	
TADSS	TADSS Requirements	
TSP Developer Information		
Developer(s) Name	TSP Developer TSP POC	TSP Developer in WF TSP identifies person(s) performing training development of TSP. TSP POC in WF TSP identifies the POC or SME assisting with the development of the TSP. Developer's Name in MAMUT is the name of the TSP developer.
Developer(s) Unit Identification Code and/or Organization	No direct counterpart	
Developer(s) Phone Number	No direct counterpart	
TSP Development Status		
Status	No direct counterpart	
Date	TSP Preparation Date	
Exercise Overview		

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
<i>Exercise Narrative</i> Exercise Storyline	Scenario Story	<p>Scenario Story in WF TSP is a story that puts the training objective into context. The story lists the "Road-to-War" events that lead up to the points requiring player units to execute their operation orders.</p> <p>Exercise Storyline in MAMUT is a general overview of the events leading up to the exercise and the expected actions that will occur during the exercise</p>
Conditions	Environment Type	<p>Environment Type in WF TSP is the type of environment the TSP is designed for. For example a TSP could be designed for a desert environment.</p> <p>Conditions in MAMUT is a general description of the environmental conditions and/or starting status as it impacts training.</p>
Nature of Threat	No direct counterpart, however, information may be derived from OPFOR Requirements.	
Exercise Difficulty	No direct counterpart, however, information may be derived from TSP Objective.	
<i>Training Objective</i>	TSP Objective	TSP Objective in WF TSP is the Training Objectives described in terms of outcome of the training, training conditions and general level of difficulty. They include the training

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
		performance specifications to be used with this TSP.
		Training Objective in MAMUT is a statement that describes the desired participant outcomes in terms of the task, performance conditions, and standards for the specified exercise.
METL Tasks Supported	No direct counterpart, however, information may be derived from TSP Tasks.	
Task Number	No direct counterpart	
Task Title	No direct counterpart	
Task Date	No direct counterpart	
Collective Tasks Trained	TSP Tasks	
Task Number	No direct counterpart	
Task Title	No direct counterpart	
Task Condition	TSP Collective Task Condition	
Task Standard	TSP Collective Task Standards	
Task Date	No direct counterpart	
Exercise Diagram	No direct counterpart	
Exercise Development Notes	No direct counterpart	
Exercise Execution Notes	No direct counterpart	
Tactical Materials		
<i>Orders/Plans</i>		

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Orders/Plans	OPORD	
Transmission Methods	No direct counterpart	
Overlays		
Overlays	Maps & Overlays	
Transmission Methods	No direct counterpart	
Tactical Reports		
Reports	No direct counterpart	
Transmission Methods	No direct counterpart	
Road to War	Scenario Story	Scenario Story in WF TSP is a story that puts the training objective into context. The story lists the "Road-to-War" events that lead up to the points requiring player units to execute their operation orders.
		Road to War in MAMUT is a graphic and/or narrative description of the events that have led up to the current exercise situation.
Geographical Location	No direct counterpart, however, some information may be derived from Scenario Story.	
Geographical Setting	No direct counterpart, however, some information may be derived from Scenario Story.	
Political Factors	No direct counterpart, however, some information may be derived from Scenario Story.	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Economic Factors	No direct counterpart, however, some information may be derived from Scenario Story.	
Social Factors	No direct counterpart, however, some information may be derived from Scenario Story.	
Military Factors	No direct counterpart, however, some information may be derived from Scenario Story.	
Infrastructure Factors	No direct counterpart, however, some information may be derived from Scenario Story.	
Exercise Control Materials		
<i>Exercise Storyboard</i>	Execution Matrix	Execution Matrix in WF TSP is the execution instructions and control per event by element. Exercise Storyboard in MAMUT is the storyboard for the exercise. It identifies the event (i.e., what is going to happen in the exercise in terms of cues/responses) and the approximate time they are going to happen.
Event	No direct counterpart	
Cues	No direct counterpart	
Unit Responses/Tasks	No direct counterpart	
Exercise Execution Timeline	Training Sequence & Conditions Duration Estimates	Training Sequence & Conditions in WF TSP is the training sequence that provides the sequence and duration (time) of all tasks to be trained. Duration Estimates in WF TSP

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
		estimates the time needed to complete training tasks. Exercise Execution Timeline in MAMUT is the timeline for the occurrence of events (i.e., cues/response) included in the Master Event List.
<i>Exercise Support Personnel Guidelines</i>	No direct counterpart, however, information may be derived from the OPFOR Instructions Package for the OPFOR Support Position.	OPFOR Instructions Package in WF TSP provides the details required to establish and execute the OPFOR's role in the training exercise. It includes (a) a size of the OPFOR element (b) the player units that will participate, (c) the equipment available, (d) the constraints (physical or financial) or other limitations, (e) tactical doctrine or techniques to be emphasized, (f) procurement of special supply items, (g) OPFOR training objectives and equipment, and (h) the source of OPFOR equipment and personnel. Exercise Support Personnel Guidelines in MAMUT are execution focused instructions provided to all exercise supporting personnel, including OPFOR, to direct them in performing the activities that support the training unit's performance. OPFOR support personnel guidelines and other MAMUT TSP Elements may be organized to create OPFOR Instructions Package.

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Role	No direct counterpart	
Duties	No direct counterpart, however, information may be derived from OPFOR Tasks for OPFOR support position.	
Location	No direct counterpart	
Tactical Purpose	No direct counterpart	
Execution Guidance	No direct counterpart, however, information may be derived from OPFOR Orders for OPFOR support position.	OPFOR Orders in WF TSP are orders for initiating OPFOR during execution of its role in the training exercise.
Unit Starting Locations	No direct counterpart	
Unit ID	No direct counterpart	
Unit Type	No direct counterpart	
Grid Coordinate	No direct counterpart	
Control Measures List	No direct counterpart	
Control Measure Type	No direct counterpart	
Control Measure ID	No direct counterpart	
Control Measure Grid Coordinate	No direct counterpart	
Target Array	No direct counterpart	
Target Type	No direct counterpart	
Target Quantity	No direct counterpart	
Target Position	No direct counterpart	
Target Ignition	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Exposure Time	No direct counterpart	
Engagement Criteria	No direct counterpart, however, some information may be derived from OPFOR Orders for the OPFOR support position.	
Rules of Engagement	No direct counterpart, however, some information may be derived from OPFOR Orders for the OPFOR support position.	
<i>Administrative Training Rules (ATR)</i>	Admin ROE	Admin ROE in WF TSP are the admin rules of engagement (ROE) that establish basic guidelines and procedures for the conduct of training exercises. Clarification of these guidelines and explanations of procedures will be IAW applicable publications, orientations, and briefings. NBC statements need to be included. ATR in MAMUT are the basic guidelines and procedures for the use of combat, combat support, and combat service support systems within the limitations and restrictions of the training environment.
Army Aviation	No direct counterpart, however, information may be derived from Admin ROE.	
Air Defense	No direct counterpart, however, information may be derived from Admin ROE.	
Combat Electronic Warfare	No direct counterpart, however,	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
	information may be derived from Admin ROE.	
Combat Service Support	No direct counterpart, however, information may be derived from Admin ROE.	
Command & Control	No direct counterpart, however, information may be derived from Admin ROE.	
Direct Fire Engagements	No direct counterpart, however, information may be derived from Admin ROE.	
Dismounted Operations	No direct counterpart, however, information may be derived from Admin ROE.	
Fire Support	No direct counterpart, however, information may be derived from Admin ROE.	
Mobility & Survivability	No direct counterpart, however, information may be derived from Admin ROE.	
NBC	No direct counterpart, however, information may be derived from Admin ROE.	
Prisoners of War Considerations	No direct counterpart, however, information may be derived from Admin ROE.	
TACAIR	No direct counterpart, however, information may be derived from Admin	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
	ROE.	
<i>Communication</i>		
Call Signs	No direct counterpart	
Communication Network Diagram	No direct counterpart	
Simulation Workarounds (Virtual/Constructive)	Workarounds	
Exercise Set-Up Materials		
Training Area/Range (Live)	Scenario Location	Scenario Location in WF TSP is the geographic location at which the TSP scenario will be executed. In the live arena, this may be a range or maneuver area. In virtual or constructive environment, this will be a location on a digital terrain database.
		Training Area/Range in MAMUT is the range or maneuver area for which the exercise was developed.
Terrain Database (Virtual/Constructive)	Scenario Location	Scenario Location in WF TSP is the geographic location at which the TSP scenario will be executed. In the live arena, this may be a range or maneuver area. In virtual or constructive environment, this will be a location on a digital terrain database.
		Terrain Database in WF TSP is the digital terrain for which the exercise was developed.
Training Site/Range Preparation	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Exercise Date & Time Group	No direct counterpart	
<i>Force Structure</i>	Task Organization List	Task Organization List in WF TSP identifies task organization by TOE, TOE element, TDA, TDA department, unit, and unit type. Force Structure in MAMUT identifies the composition of the friendly and enemy forces as well as civilian/government agencies in the exercise.
BLUFOR Task Organization	No direct counterpart, however, information may be derived from Task Organization List.	
OPFOR Task Organization	No direct counterpart, however, information may be derived from Task Organization List.	
White Elements	No direct counterpart, however, information may be derived from Task Organization List.	
Green Elements	No direct counterpart, however, information may be derived from Task Organization List.	
<i>Classes of Supply</i>	Organic Unit Requirements OPFOR Requirement Support Requirements O/C Requirements	Organic Unit Requirements in WF TSP lists the necessary equipment and logistical support requirements needed to execute the training. OPFOR Requirements in WF TSP lists the personnel and equipment needed.

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
		Support Requirement in WF TSP lists all personnel, equipment, or supplies needed. O/C Requirements in WF TSP lists the amount, rank, qualifications, and locations of the necessary O/Cs as well as their duties/responsibilities and logistical requirements. Classes of Supply in MAMUT lists the logistic requirements (live or simulated) in terms of the amount of classes of supply required for the exercise.
Class I	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Subsistence Items	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Gratuitous-issue Health Items	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Unit of Issue	No direct counterpart	
Gratuitous-issue Comfort Items	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class II	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Clothing	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Individual Equipment	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Tentage	No direct counterpart	
Nomenclature	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Organizational Tool Sets and Kits	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Hand Tools	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Maps	No direct counterpart	
DMA Stock Number	No direct counterpart	
Edition Number	No direct counterpart	
Quantity	No direct counterpart	
Administrative and Housekeeping Supplies	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Administrative and Housekeeping Equipment	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class III	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Petroleum fuels	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Lubricants	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Hydraulic and insulating oils	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Unit of Issue	No direct counterpart	
Preservative	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Liquids and Gases	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Bulk Chemical Products	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Coolants	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Deicer and Antifreeze Compounds	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Additives of Petroleum	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Chemical Products	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Coal	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class IV	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class V	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Nomenclature	No direct counterpart	
DODIC	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class VI	No direct counterpart	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class VII	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Nomenclature	No direct counterpart	
LIN	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class VIII	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
Class IX	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Class X	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
MISC	No direct counterpart, however, information may be derived from Organic Unit Requirements, OPFOR Requirement, Support Requirements, and O/C Requirements.	
Nomenclature	No direct counterpart	
National Stock Number	No direct counterpart	
Unit of Issue	No direct counterpart	
<i>Starting Locations</i>	Initialization & Orientation Data	Initialization & Orientation Data in WF TSP (primarily for Virtual and Constructive simulations) provides initialization data on units, systems/entities, initial positions, initial orientation, and formation type.
		Starting Locations in MAMUT lists the individual soldier, vehicle, or unit grid

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
		locations at the start of the exercise.
BLUFOR	No direct counterpart, however, information may be derived from Initialization & Orientation Data	
OPFOR	No direct counterpart, however, information may be derived from Initialization & Orientation Data	
WHITE	No direct counterpart, however, information may be derived from Initialization & Orientation Data	
Green	No direct counterpart, however, information may be derived from Initialization & Orientation Data	
<i>Starting Conditions</i>	Initialization & Orientation Data	Initialization & Orientation Data (primarily for Virtual and Constructive simulations) in WF TSP provides initialization data on units, systems/entities, initial positions, initial orientation, and formation type.
		Starting Conditions in MAMUT lists the initial status for all entities at the start of the exercise.
Orientation	Initialization & Orientation Data	
Formation	Initialization & Orientation Data	
Spacing	No direct counterpart	
Posture	No direct counterpart	
Opening Range (Virtual/Constructive/Live)	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Fire Status (Virtual/Constructive/Live)	No direct counterpart	
Maintenance Status	No direct counterpart	
Equipment Status	No direct counterpart	
Personnel Status	No direct counterpart	
Gunnery Competency	No direct counterpart	
<i>Environmental Conditions</i>	Light & Weather Conditions	Light & Weather Conditions in WFTSP provides the light and weather data to be used in the scenario and training sequence.
Barometric Pressure	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Cloud Ceiling	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Density Altitude	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Fog	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
General Visibility	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Haze	No direct counterpart, however, information may be derived from Light &	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
	Weather Conditions.	
Relative Humidity	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Absolute Humidity	No direct counterpart however information may be derived from Light & Weather Conditions.	
Illumination	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Precipitation	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Surface Wind	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
Temperature	No direct counterpart, however, information may be derived from Light & Weather Conditions.	
<i>Commo Plan</i>		
Radio Nets	No direct counterpart	
Radio Frequencies	No direct counterpart	
<i>Simulation File(s)</i>	Initialization & Orientation Data	Initialization & Orientation Data in WF TSP provides initialization data (primarily for Virtual and Constructive simulations) on units, systems/entities, initial positions, initial orientation, and formation type.

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
		Simulation File in MAMUT is the electronic file(s) that loads exercise starting data into the simulator.
Evaluation Plan		
<i>Observation Plan</i>	O/C Preparation Package AAR Framework	<p>O/C Preparation Package in WF TSP is the information required to enable the O/C s to prepare for and to implement the TSP.</p> <p>AAR Framework in WF TSP is a template that guides data collection, recognition of critical events and formatting of the AAR presentation. These templates provide the trainer with the MTP reference information (task, condition, standard) for each task, and the set of key doctrinal steps/thought processes for accomplishment of the task or mission.</p>
Observation Role	O/C Requirements	<p>Observation Plan in MAMUT is the plan for observing and recording unit task performance.</p> <p>O/C Requirements in WF TSP describes the amount, rank, qualifications, and location of the necessary O/Cs as well as their duties/responsibilities and logistical requirements.</p> <p>Observation Role in MAMUT list the individuals who act as O/Cs along and their roles in the exercise.</p>

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Observation Duties		
Observation Location	O/C Requirements	
Observation Schedule	No direct counterpart	
Observation Focus	No direct counterpart	
METL Tasks Supported	No direct counterpart, however, information may be derived from TSP Tasks.	
Collective Tasks Trained	TSP Tasks	Tasks to be trained.
Supporting Collective Tasks	No direct counterpart, however, information may be derived from TSP Tasks.	
Supporting Individual Tasks	No direct counterpart, however, information may be derived from TSP Tasks.	
Observation Tools	No direct counterpart	
AAR Plan	No direct counterpart, however, information may be derived from AAR Framework	AAR Framework in WF TSP is a template that guides data collection, recognition of critical events and formatting of the AAR presentation. These templates provide the trainer with the MTP reference information (task, condition, standard) for each task, and the set of key doctrinal steps/thought processes for accomplishment of the task or mission.
AAR Role	No direct counterpart	
AAR Focus	No direct counterpart	
AAR Technique	No direct counterpart	
AAR Facilitators	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
AAR Attendees	No direct counterpart	
AAR Schedule	No direct counterpart	
AAR Location	No direct counterpart	
AAR Type	No direct counterpart	
AAR Tools	AAR Framework	AAR Framework in WF TSP is a template that guides data collection, recognition of critical events and formatting of the AAR presentation. These templates provide the trainer with the MTP reference information (task, condition, standard) for each task, and the set of key doctrinal steps/thought processes for accomplishment of the task or mission.
Administrative Materials		
Planning Timeline	No direct counterpart	
Date	No direct counterpart	
Event/Activity	No direct counterpart	
Who	No direct counterpart	
Exercise Schedule	No direct counterpart	
Date	No direct counterpart	
Time	No direct counterpart	
Event/Activity	No direct counterpart	
Personnel		
Personnel Required		
Observer/Controller	O/C Requirements	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Higher/Adjacent/Subordinate Units	No direct counterpart, however, information may be derived from Support Requirements	
OPFOR/Units	No direct counterpart, however, information may be derived from OPFOR Requirement	
Civilians/Government Agencies	No direct counterpart, however, information may be derived from Support Requirements	
Administrative Support Personnel	No direct counterpart, however, information may be derived from Support Requirements	
Personnel Qualifications	No direct counterpart, however, information may be derived from O/C Requirements for the O/C position.	O/C Requirements in WF TSP describes the amount, rank, qualifications, and location of the necessary O/Cs as well as their duties/responsibilities and logistical requirements. Personnel Qualifications in MAMUT lists the prerequisite knowledge, experience, and capabilities an individual must possess to support a specific exercise position.
Risk Assessment & Management	Risk Assessment	
Environmental Considerations	Environmental Impact Considerations	Environmental Impact Considerations in WF TSP lists the factors affecting the amount or type of environmental impact that can be modified by planning.
Safety Considerations	No direct counterpart	

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
References		
Document List	References & Glossary	
Key Word Index	No direct counterpart	
No direct counterpart, however, information may be derived from Force Structure and Execution Guidance in Exercise Support Position Guidelines.	SAF List	SAF List in WF TSP provides the identification and requirements for SAF, accordingly to simulation system capabilities and training requirements.
MAMUT TSP Elements can be organized to create TSP Historic Development File (TSP Developer Information).	TSP Historic Development File	TSP Historic Development File in WF TSP is a record of development of the TSP. It includes the developer, approving authority (proponent) and date of preparation.
No direct counterpart	TSP Approving Authority	TSP Approving Authority in the WF TSP is the individual, organization, committee or other body which has the right and power to make decisions (e.g., approve or disapprove in regard to some process or activity).
No direct counterpart, however, information may be derived from Mission Type, Force Structure, Personnel Required, and Classes of Supply.	Supported TOE/TDA	Table of Organization & Equipment in WF TSP is a record containing mission and organizational structure, personnel and equipment requirements for a type of military unit. Table of Distribution & Allowances in WF TSP is a table that prescribes the mission, organizational structure, personnel and equipment requirements for a type of military unit and is the basis for an authorizations document.
No direct counterpart, however, information may be derived from	Customize Scenario Guidance	Customize Scenario Guidance in WF TSP is a guide for users to customize the scenario for

TSP Component Comparison		
MAMUT TSP Element List	Collective WF TSP Elements	Comments
Exercise Development Notes.		their particular training needs. Allows users to make changes to the TSP that will make it fit his unit in order to maximize its training value.
No direct counterpart, however, the TSP development "tool" will contain templates to allow the user to develop the THP.	Take Home Package (THP) Guide	THP Guide in WF TSP provides a construction guide for the build of the THP. This package documents all training events, within the training exercise, and AARs. It includes a written report detailing performance strengths and weaknesses, and recommendations for focus of home station training programs (if applicable). Reference AR 350-50, CTC Program
MAMUT TSP Elements can be organized to create Unit Training Material.	Unit Training Material	Unit Training Material in WF TSP is material needed by the training unit for a TSP. This will also include the unit intro material.
MAMUT TSP Elements can be organized to create Unit Training Material.	Leader's Training Guide	The Leader's Training Guide in WF TSP includes pre-training requirements, special knowledge requirements, and a Train-the-Trainer guide.
No direct counterpart	Demo	Demo in WF TSP is a multi-media demonstration of a competent unit conducting the TSP exercise. It will include a view of the unit's AAR highlighting key tactical, technical, and procedural teaching points for which the exercise was designed.